Nautical Archaeology Society

The *Rooswijk*

SCUBA SUPPORT PROJECT
Project Report 2017

Rooswijk Protected Wreck Site, Goodwin Sands
Archaeological Excavation and Preservation

Nautical Archaeology Society

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Cultural Heritage Agency of the Netherlands
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Historic England

MSDS Marine

Rooswijk Protected Wreck Site, Goodwin Sands: Archaeological Excavation and Preservation

SCUBA Sub-Project 2017

Project Report

11th January 2018

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1.0 Background and Project Summary

1.0.1 This project report relates to investigations of the *Rooswijk* protected wreck site by professional and volunteer SCUBA divers that took place between 26th August and the 3rd September 2017. The wreck is of an 18th-century ship of the Dutch East India Company (Verenigde Oostindische Compagnie, 'VOC') lost on the Goodwin Sands in January 1740 and designated under the Protection of Wrecks Act, 1973. The remains of the *Rooswijk,* which are spread over four known seabed locations*,* will be the subject of a large-scale excavation, scheduled to take place between July and September 2017, under the *Rooswijk Protected Wreck Site, Goodwin Sands: Archaeological Excavation and Preservation* project, funded by Rijksdienst voor het Cultureel Erfgoed (RCE) and in partnership with Historic England (HE). The project reported here supplements the work of the main project[1].

1.0.2 While the excavation work associated with the main project progresses on one of the four seabed locations (the 'West Site'), the SCUBA investigations covered by this project report took place on two of the other sites associated with the wreck: the North (Barrel) Site and the North-East (Gun) Site. These parts of the wreck site were not be excavated by the main project, but were left in-situ, with the SCUBA investigations being geared toward gathering vital information to aid the ongoing in-situ preservation of these parts of the wreck. The SCUBA work was timed to coincide with the main phase of excavation, with the aim to improve productivity and capitalise on shared resources.

1.0.3 The *Rooswijk* is on Historic England's Heritage at Risk Register, and a number of areas of vulnerability have been identified. These include exposure and decay following the periodic movement of sands; visits by opportunistic divers; the location of the wreck close to a major shipping route; the extraction of aggregates from the surrounding area; and, trawling activities in the area. These risks formed the catalyst for the proposed excavation work on the site. The excavation was a large- scale, high-profile project, intended to provide ex-situ preservation of a part of the site, while gathering information to aid in-situ preservation for the remainder of the site. While this will provide substantial benefits for the management of the wreck, the high-profile nature of the work may make elements of the wreck more vulnerable to opportunistic looting. Following survey work in 2017 a collection of possible cannons which are potentially connected with the *Rooswijk* were identified, beyond the designated zone. Laying outside the protected area these remains may face heightened risks, and as such it was proposed by MSDS Marine Ltd that a SCUBA project could focus on investigating these anomalies, to provide advice on their future management. Alongside investigation of the possible cannon features the SCUBA project also included a visit to the North (Barrel) Site, all with a view to improving understanding of the site to aid ongoing management.

1.0.4 The main aims of this project were to improve understanding and knowledge of the sites; to gather information which will be of use particularly in the management of remains to be left in-situ; and, to undertake public engagement through inclusion of volunteer recreational divers.

[1] The main project is subject to a separate Project Design, formulated by MSDS Marine Ltd and agreed by RCE and Historic England, the key partners in the work. A detailed description of the site, location and main project (*Rooswijk Protected Wreck Site, Goodwin Sands: Archaeological Excavation and Preservation Project)* are set out within the main project design.

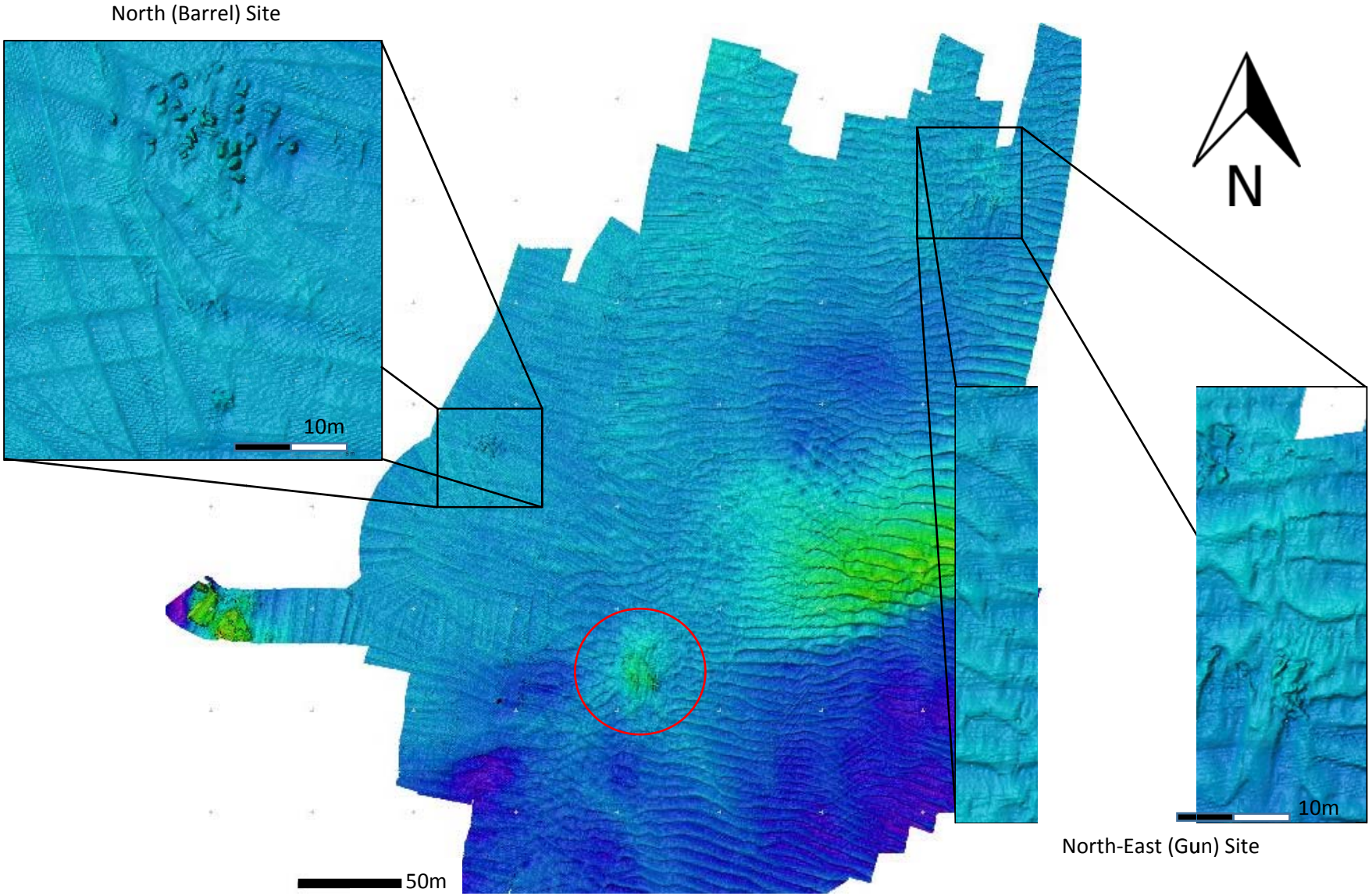


Figure 1: Location of the North-East (Gun) Site and the North (Barrel) Site, in relation to the main Rooswijk site (circled red). Multibeam survey data provided by M^ ^ĂŶĚ W ^

2.0 Aims and Objectives

2.0.1 The aims and objectives were as follows:

1. To undertake SCUBA investigations focused on the North (Barrel) site, the East site and the North-East (Gun) site in order to improve understanding of these areas of wreckage, focused particularly on a collection of cannon identified on geophysical survey data in 2017, lying outside the current designation boundaries and to provide management advice on these remains;
2. To feed the results of these surveys into those of the wider *Rooswijk Protected Wreck Site, Goodwin Sands: Archaeological Excavation and Preservation* project and associated project aims, which include improved knowledge and management for the *Rooswijk*;
3. To undertake the SCUBA project alongside the SSDE excavation, to increase productivity and efficiency; and
4. To ensure the SCUBA project, like the main project, has outreach and public engagement at its heart.

2.0.2 In terms of the contribution to the main project, the SCUBA project aimed to improve understanding of the remains of the *Rooswijk*; provide information which will be used in formulating management strategies, particularly for those parts of the wreck to be left in-situ; and provide an important opportunity for public engagement, through the use of volunteer divers. These aims were all in line with the aims set out within the agreed Project Design for the main project.

3.0 Business Case

3.0.1 The project will contribute to the aims of both English and Dutch heritage policies. As this project will take steps toward addressing the aims and objectives of the main *Rooswijk Protected Wreck Site, Goodwin Sands: Archaeological Excavation and Preservation* project, it will also contribute to many of the same heritage policy aims (see the Project Design for the main project for further details, and Project **Aim 2** above). The table below provides additional details of those aims to which the project will make the greatest contribution.

Table 1: Contribution of the project to English and Dutch heritage policy

Area	Dutch Policy	English Policy	Project Aims and Outcomes
	Shared Cultural Heritage Policy and Maritime Programme Themes	Heritage 2020 and HE Action Plan	
Improving skills and relationships (local, national and international) for the benefit of shared cultural heritage	Promoting international relations; promoting Netherlands interests; Knowledge exchange	Capacity building	**Aim 4:** The project will encourage involvement from both Dutch and British volunteer divers. These volunteers will dive alongside the professional SCUBA team helping to cement international relationships between those involved with or interested in marine cultural heritage.
Knowledge and Protection	Sustainable conservation and use of shared heritage; related to increasing knowledge of	Discovery, understanding and identification; Identify and protect	**Aim 1.** Investigation of three areas of wreckage thought to be associated with the *Rooswijk.* This will include investigation of a

Area	Dutch Policy	English Policy	Project Aims and Outcomes
	shared cultural heritage; Knowledge building and knowledge exchange	England's most important heritage	probable group of cannon which lie beyond the designated area. Further investigation of these remains will be geared to improve their future management. Increased knowledge of the site overall will also contribute to these Dutch and English Policies. **Aim 2:** The project will also interface with the main excavation project, to facilitate knowledge building and exchange.
Public engagement	Sustainable conservation and use of shared heritage; related to raising awareness of cultural heritage and making this heritage accessible to the public	Public engagement; Champion England's Heritage	**Aim 4:** Dutch and British volunteer divers will form a key part of the project team and thus public engagement will be at the heart of this project.

3.0.2 Detailed discussion of the relationship between the main project, and by extension this project, and national and international policies is set out within the main Project Design.

3.0.3 The project was timed to run concurrently with the main excavation project, thereby allowing any additional knowledge gained or questions arising from the surveys to be taken into account while excavation work is ongoing. Additionally, this allowed the SCUBA project to be undertaken with minimal project management, pre-fieldwork and post-fieldwork costs, as the majority of these costs will be encompassed by those already allocated in association with the main project.

3.0.4 MSDS Marine Ltd acted as the project managers, as with the main excavation project. This is to ensure the responsibility for management and proper integration and knowledge-exchange between projects rests with one organisation, to promote clarity within the project structure and to minimise any risks of miscommunication. The Nautical Archaeology Society (NAS) planned and implemented the project. The NAS were responsible for delivery of the outreach aims of the main project. Due to their experience with outreach, and as the proposed SCUBA-led investigations involve a significant outreach component through use of volunteer divers, NAS were ideally placed to run the proposed project. The project team was made up an HSE-compliant SCUBA diving team consisting of a supervisor and four divers. Eight volunteers dived alongside the professional SCUBA team, in two groups during the period of the investigation.

4.0 Methods

4.0.1 It was intended that the project would revolve around the use of SCUBA for the investigation and survey of three areas of wreckage associated with the *Rooswijk*. In fact it only proved possible to investigate two areas of wreckage. Due to the positioning of the anchoring lines for the main surface ship, *Terschelling,* it was deemed impossible on the grounds of safety to investigate the East site. For the same reason it was only possible to dive the Barrel Site on the 26th August 2017. Investigations took place on the Gun Site between 27th August and 3rd September

2017. These investigations included non-intrusive survey work and possible recovery of items if deemed necessary for identification purposes, or if the remains were at-risk.

4.0.2 The project team was made up an HSE-compliant SCUBA diving team consisting of a supervisor and four professional divers. The NAS are a diving contractor registered with the HSE and were the diving contractor for the SCUBA project. The HSE divers were suitably qualified to work under the Diving at Work Regulations 1997 using the Scientific and Archaeological Code of Practise and all held an in-date HSE diving medical.

4.0.3 A further nine volunteer divers, from the Dutch and British recreational diving communities, made up the rest of the team. The volunteers were all qualified to CMAS 2* or equivalent and held medical certification as approved by their qualifying body. The volunteer divers assisted the professional dive team in two groups; the first group of four volunteers will undertake work on the first three days of the project, and the second group of four volunteers will be present on the final four days. The project was undertaken from the *Lady Grace* commercially coded, vessel supplied by MSDS Marine Ltd and skippered by Antony Hills.

Name	**Role**	**Dates participated**	**Nationality**
Peta Knott, NAS Officer	Dive Supervisor	26/08/17 – 03/09/17	Australian, living in UK
Mark Beattie-Edwards, NAS Officer	Diver & Lead Archaeologist	26/08/17 – 03/09/17	British
Martin Davies	Diver & Photographer	26/08/17 – 03/09/17	British
Sven Van Haelst	Diver & Archaeologist	26/08/17 – 03/09/17	Dutch
Mark Hobbs	Diver	26/08/17 – 03/09/17	British
Richard Savenije	Volunteer Diver	26/08/17 – 29/08/17	Dutch
Edmund Fennema	Volunteer Diver	26/08/17 – 29/08/17	Dutch
Terry Vickers	Volunteer Diver	26/08/17 – 29/08/17	British
Duncan Ross	Volunteer Diver	26/08/17 – 29/08/17	British
Monica Jong	Volunteer Diver	31/08/17 – 03/09/17	Dutch, living in UK
Sara Hasan	Volunteer Diver	01/09/17 – 03/09/17	British
Rob Konings	Volunteer Diver	31/08/17 – 03/09/17	Dutch
Adam Malkowski	Volunteer Diver	31/08/17 – 03/09/17	Polish, living in UK
Mike Furguson	Volunteer Diver	31/08/17	British

Table 1: The Rooswijk SCUBA Project team

4.0.4 Pre and post-fieldwork activities (including assessment, analysis and conservation of any items recovered[2]) will be incorporated within those which will take place ahead of, and following, the period of excavation associated with the main project.

4.0.5 Any necessary licence applications, including a licence under the Protection of Wrecks Act, were submitted by MSDS Marine Ltd.

5.0 Interfaces

5.0.1 The primary interface for this project was the *Rooswijk Protected Wreck Site, Goodwin Sands: Archaeological Excavation and Preservation* project. The aims, proposed outcomes, structure and finances of this project are inextricably connected with the main project, for which funding has already been allocated and the Project Design agreed. Additionally, as with the main project, the proposed project will interface with Ramsgate Heritage Action Zone, the specifics of which will be in line with those outlined in the main project design.

6.0 Health and Safety

6.0.1 **Diving and boat-based health and safety**, including the role of the Diving Contractor for the SCUBA project were supplied by the NAS. Shore-based health and safety were covered by MSDS Marine Ltd. As overall project managers, MSDS Marine Ltd took on the responsibility for ensuring that all Health and Safety documentation is fully compliant with HSE regulations. All work was undertaken in line with the Health and Safety at Work etc Act, 1974, the Workplace (Health, Safety and Welfare) Regulations, 1992, the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, 1995 and the Management of Health and Safety at Work Regulations, 1999.

6.0.2 **Maintenance of plant and equipment:** Specialist diving equipment was supplied by the NAS and MSDS Marine Ltd. This was maintained and tested according to schedules recommended by suppliers. Boat- based equipment maintenance, including the vessel, was the responsibility of the owner. Maintenance schedules, test certificates and compliance documents were checked by MSDS Marine prior to the commencement of works.

6.0.3 **Risk Assessment**: All activities were subject to risk assessment. Office/shore-based activities such as driving to and from site, and any recording or research carried out during weather downtime were covered by MSDS Marine. Risk assessments for fieldwork activities including boat-based and diving operations were supplied by the NAS. Responsibility for preparing and ensuring risk assessments have been prepared, and ensuring that they are read by project staff rested with Project Manager (MSDS Marine Ltd). The Project Manager was also responsible for the Health and Safety assessment of all other suppliers, including the NAS.

[2] Note, work will be focused on establishing the date/ provenance of the guns identified outside of the designated area. Lifting of these guns was not proposed at this stage and under the current circumstances, and any such recoveries would be considered a last resort, to be agreed in advance with Historic England. It is proposed that any other recoveries will be restricted to small isolated items deemed at-risk, or recovered for identification purposes. Any necessary post-excavation requirements will be met via the budget for the main project.

6.0.4 **Accident and Emergency:** Contact details are included in every Risk Assessment, for dealing with notifiable injuries, incidents, near misses, and reportable accidents. Appropriate levels of first aid equipment and trained first aiders were maintained both at onshore and offshore locations, including O2 provision for diving operations.

6.0.5 **Shore-based Operations:** Terrestrial operations were guided by the health and safety documentation and risk assessment for terrestrial work, as produced by MSDS Marine Ltd. Risk assessments will be amended for specific activities including office based work and travel to and from docking locations en-route to site. Once aboard any vessel used in project activities the project team were covered by the risk assessments for boat-based or diving operations, by the NAS.

6.0.6 **Boat-based Operations**: Boat-based investigations were guided by the health and safety plan and risk assessment for the dive vessel, as produced by the NAS. The risk assessment was amended for specific activities, and all personnel on the dive vessel were given an H&S induction. Overall responsibility for navigation, seamanship and marine safety rested with the vessel Master. The relationship between the Master, crew and project staff (internal and sub-contracted) was set out explicitly in the risk assessments for boat-based activities.

6.0.7 **Diving Operations:** Diving was carried out under the Diving at Work Regulations. Diving operations were guided by NAS's Diving Project Plan.

6.0.8 The project is a joint venture led by RCE and HE. The NAS will be the Diving Contractor and will meet the project's obligations under the applicable regulations. The NAS has been registered as a diving contractor with the HSE. MSDS Marine Ltd were the client, and will meet their obligations under the applicable regulations. The project has been funded by RCE and HE, and are MSDS Marine Ltd's client.

6.0.9 Diving operations were undertaken under the Approved Code of Practice (ACOP) for Scientific and Archaeological Diving Projects (Health and Safety Executive, 2014). This ACOP allows for diving using SCUBA or Surface Supplied Diving Equipment (SSDE). Due to the nature of the work SCUBA equipment was used.

6.0.10 Diving operations were governed by the NAS Diving Project Plan, this included:

- Project Risk Assessment – compiled by the diving contractor, the NAS
- Diving Operations Record / Plan– compiled by the dive supervisor for each days diving;
- Dive Log – to log all dive details;
- Daily Diving Risk Assessment – the site specific risk assessment was supplemented with a daily assessment in order to identify specific risks.

6.0.11 For diving undertaken on SCUBA there was a minimum of five persons in the team. If the risk assessment allows, and/or sufficient suitably-qualified divers are available it may be possible to have four or more divers in the water at any one time when utilising this method.

6.0.12 All members of the proposed diving team were qualified to HSE SCUBA or equivalent, and had a valid and in-date medical certificate. Supervisors were appointed in writing by the NAS.

6.0.13 Volunteer SCUBA divers worked alongside the HSE team. All volunteers were in possession of a valid medical. All of the requirements of applicable regulations and ACOP were met.

6.0.14 SCUBA diving operations conducted by the HSE team used OTS Guardian full face masks with a 15 litre cylinder and a 3 litre bail out. Communications with the surface were maintained via through-water comms.

7.0 Products, dissemination and archiving

7.0.1 Following completion of the fieldwork element of the project the NAS has produced this report detailing the findings and conclusions of the work. This report will provide archaeological data and discussion. Additionally, the data set out in the report will be used to support any management recommendations made in overall project report. As the SCUBA project will endeavour to establish the date and provenance of the guns found beyond the designated area, it is understood that the results set out within the SCUBA project report may be used to support management decisions made ahead of the end of excavation, and thus ahead of any overall management strategies dealing the *Rooswijk* overall. This report will provide management advice for these guns, while any other relevant site data will be worked into the overall management recommendations made for the site, set out in the main project report.

7.0.2 This report will be provided to RCE and HE. The report, or parts of the report, can also be made publically available, at the discretion of RCE and HE. It will be archived with the Historic England Archive or ADS and the RCE Archive.

7.0.3 Dissemination will take place via the formal project report, and also via social media. All initial media enquiries will be directed through the RCE and HE Press Offices. At the discretion of RCE and HE it was proposed that the NAS and MSDS Marine Ltd will post updates on social media, alongside those from the main project. The project-specific hashtag #Rooswijk1740 was used by the team on Twitter in 2016 to great success. This hashtag continued to be used in 2017, as was the hashtag #RamsgateHAZ in relation to the Ramsgate Heritage Action Zone.

7.0.4 All products, including the report and fieldwork archive (plans, photographs, videos, written records, GIS data (including the 3H *Site Recorder* file) and all archaeological catalogues and indexes), will be provided to MSDS Marine Ltd for archiving alongside the main project.

8.0 Results

8.0.1 **Site Location –** the initial project brief supplied by MSDS Marine Ltd was complement the excavation work being undertaken on the main excavation (the 'West Site'), by carrying out investigations on three areas identified from multibeam sonar imagery of the surrounding area. The three target sites were known as the East Site; the North (Barrel) Site and the North-East (Gun) Site. These parts of the wreck site were not be excavated by the main project, but were left in-situ, with the SCUBA investigations being geared toward gathering vital information to aid the ongoing in-situ preservation of these parts of the wreck. Due to the positioning of the

anchor lines for the main surface support vessel, *Terschelling*, it was deemed impossible to investigate the East Site on the grounds of safety.

8.0.2 **The North (Barrel) Site:** It was known from previous dives undertaken on the North Site that there were a cluster of what were presumed to be concreted barrel remains. As a result this area was commonly referred to as the Barrel Site. The co-ordinates for the centre of the barrel site area, taken from the multibeam survey are: 51° 16.470 N; 001° 34.444 E (WGS84) (Figure 1 & 2).

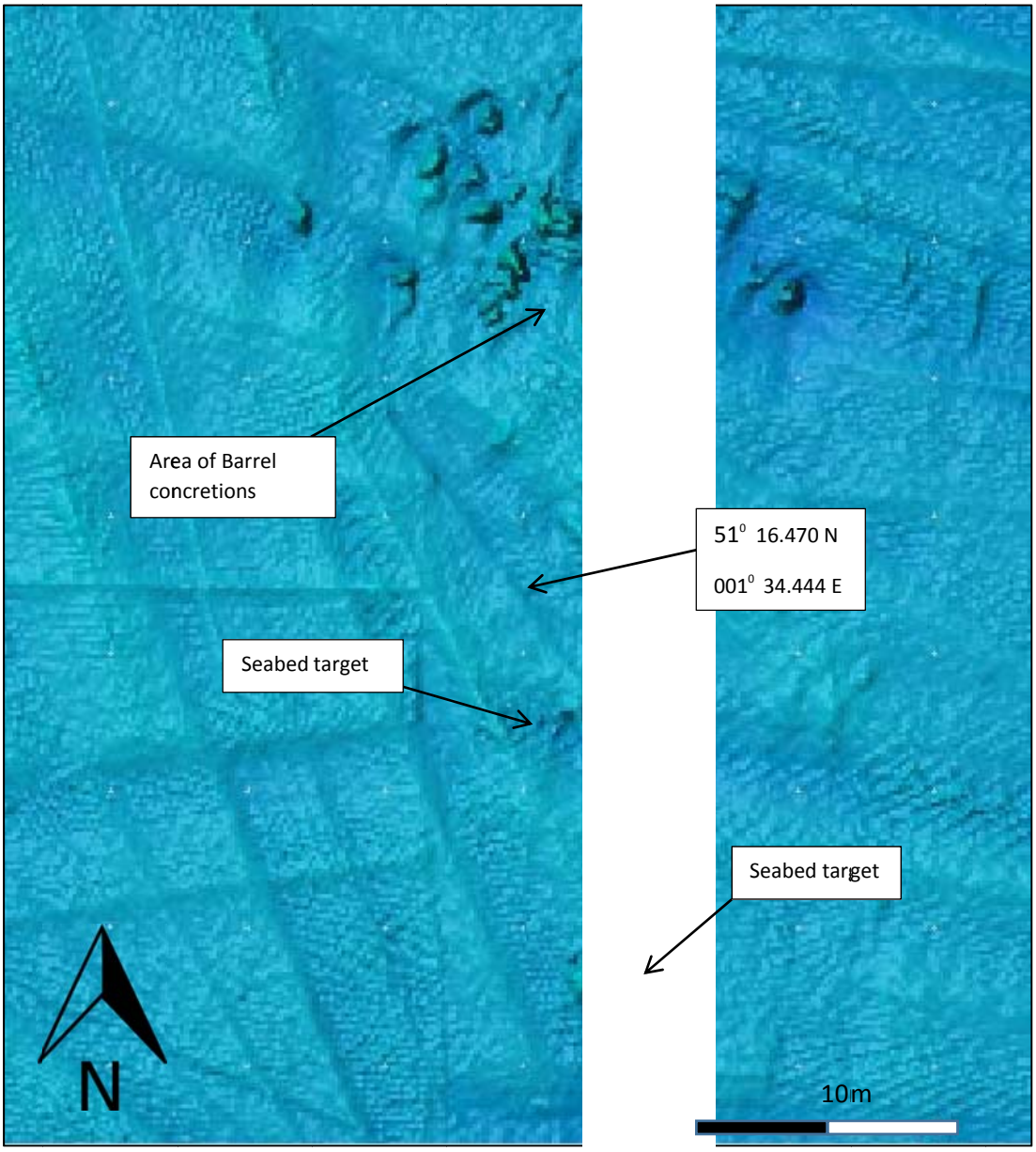


Figure 2: The North (Barrel) Site - from 2017 multibeam sonar survey (MSDS ĂŶĚ W ^)

8.0.3 The area of investigation of the North (Barrel) Site consists of approximately 700 square metres, at a maximum distance of 35m on the North-South axis and 20m maximum on the East-West axis.

8.0.4 **The North-East (Gun) Site:** From interpretation of the 2017 multibeam survey it was anticipated that the North-East Site consisted of a number of guns lying flat on the seabed. As a result this area was commonly referred to as the Gun Site. Prior to diving investigation it was anticipated by MSDS Marine Ltd that there may be at least nine guns present in this area. Upon close examination the NAS identified a tenth target that may also be a gun (Figure 3). The co-ordinates for the centre of the North East (Gun) Site, taken from the multibeam survey are: 51^0 16.545 N; 001^0 34.645 E (WGS84) (Figure 1 & 3).

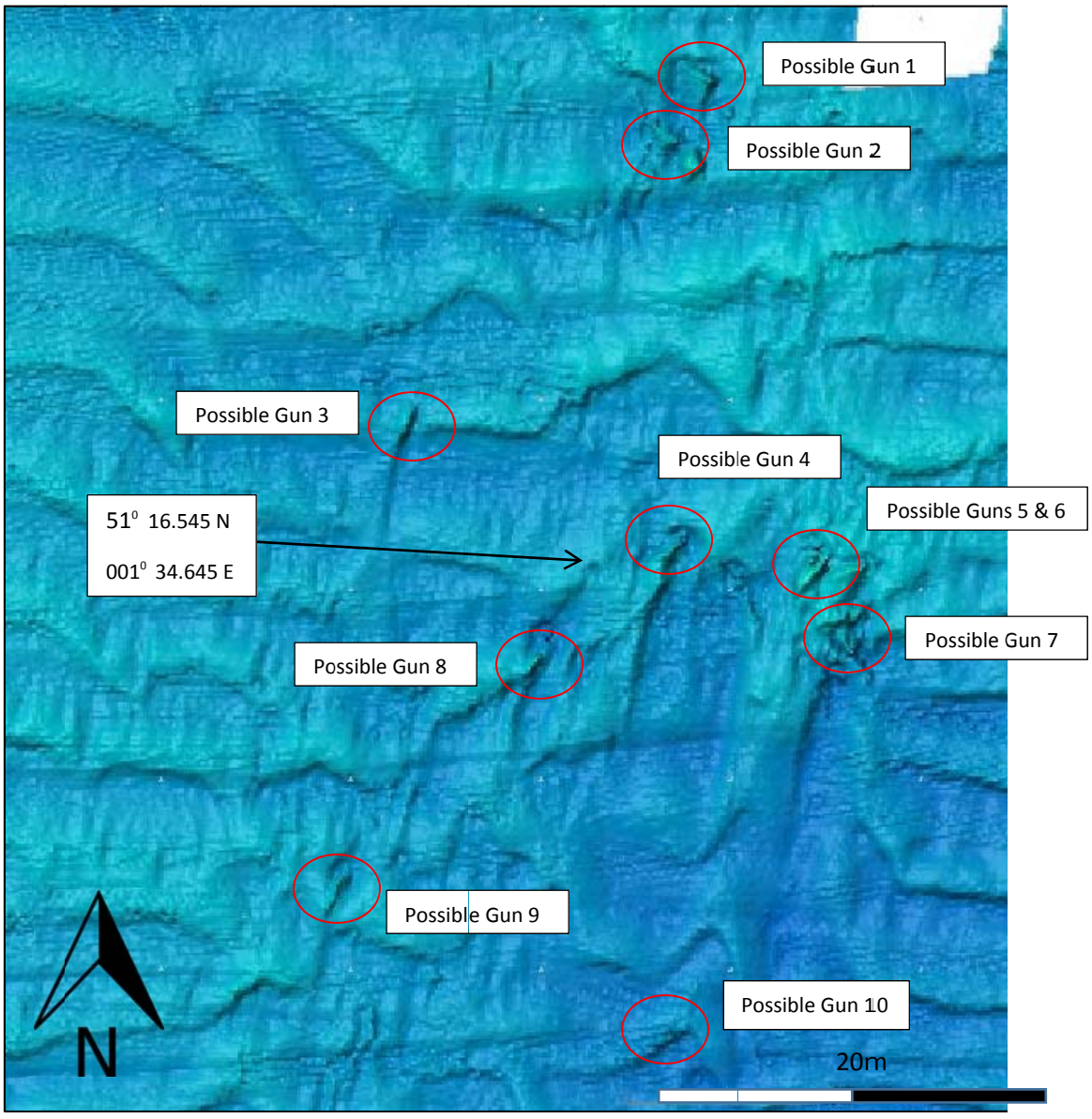


Figure 3: The North-East (Gun) site, with locations of ten possible guns - from 2017 multibeam sonar survey (MSDS ÄŸË W ^)

8.0.5 The area of investigation of the North-East (Gun) Site measures approximately 1,400 square metres of seabed, with a maximum distance of c.50m on a North-South axis and c. 28m on an East-West Axis.

8.0.6 **Seabed Geology and Topography:** As with the majority of the Goodwin Sands the area of investigation consists of fine-grained, highly mobile sand, which in places is made up of a

mixture of sand, gravel and broken shell. From the 2017 multibeam sonar survey data it was anticipated that the area of investigations around the Barrel Site and the Gun Site would both include small sand waves, comprising of a peak and a trough. The area around the Gun Site in particular consisted of sand waves with small troughs no more than 0.5m deep, with the peaks of each small sand wave being separated by no more than 4m. Diver observations and video footage from the Gun Site in particular illustrated these sand waves.

8.0.7 **Existing site data and History:** Before commencing the investigations the NAS were provided with the 2017 multibeam sonar data by MSDS Marine for the Gun Site, Barrel Site and the East Site. This data provided a baseline from which the diving operations were planned and provided a georeferenced dataset which was imported to 3H's *Site Recorder* software. *Site Recorder* was also being used on the main excavation meaning that datasets could be merged in the future.

8.0.8 The NAS were provided with a drawn sketch of the Gun Site by divers Feiko Riemersma, Joop Gontemaker and Berdie de Ruiter from a dive that took place on the 16th August 2017. This sketch suggested the presence of up to six iron guns, wood and other unidentified concretions (See Appendix 1). The sketch included approximate distances between features, a depth of 22m and a possible orientations of features.

8.1 Fieldwork results: The North (Barrel) Site

8.1.1 – As already stated, due to the positioning of the anchoring lines for the main surface ship, *Terschelling,* it was deemed impossible on the grounds of safety to investigate the East site. For the same reason it was only possible to dive the North (Barrel) Site on a single day - the 26th August 2017.

8.1.2 Diving operations undertaken on the 26th August 2017 on the Barrel site were carried out during slack water periods between 13:20 – 14:14 BST and 18:57 - 20:32 BST. A total of 6 dives involving 10 divers amounted to 142 minutes spent underwater (see Appendix 2).

8.1.3 Although it was the intention to investigate the cluster of round survey anomalies, believed to be concreted barrels, none of the divers on the 26th August reported seeing any barrels on the seabed. Instead of barrels the divers reported finding the remains of three iron anchors, timber (Figure 4) and a copper pot or bowl (Figure 5) on the seabed. A coconut was also found lying in between the two anchors. The coconut was recovered and handed to the main excavation site team and was allocated the Find Number R00002. The copper bowl or pot measured 26cm in diameter (Figure 5). It was not recovered by the dive team.

8.1.4 Two of the anchors (BS17-1 and BS17-2) were recorded as lying on top of one another. Both were lying flat on the seabed (not dug in) at c.30 – 45 degrees orientation, both with their crowns to the North-East and the ends of their shanks to the South-West (Figure 4). The uppermost anchor (BS17-1) was visible in its entirety and was measured at approximately 1m in length from fluke to fluke. Although heavily concreted BS17-1 also exhibited what is likely to be the

anchor ring. These anchors would have had wooden stocks, which if attached will have most likely eroded away and may no longer be present on the seabed.

8.1.5 No anchor stocks were immediately obvious on BS17-1 or BS17-2, but all divers reported seeing some wood lying flat on the seabed around the anchors, which was corroborated on video. One piece was recorded as being c.70cm long and c.30cm thick. A single yellow brick, a small piece of copper sheeting eroding out of the sand, a copper tube and an unidentified U-shaped object. Unfortunately as the North (Barrel) Site was not dived again it was not possible to investigate these objects further.

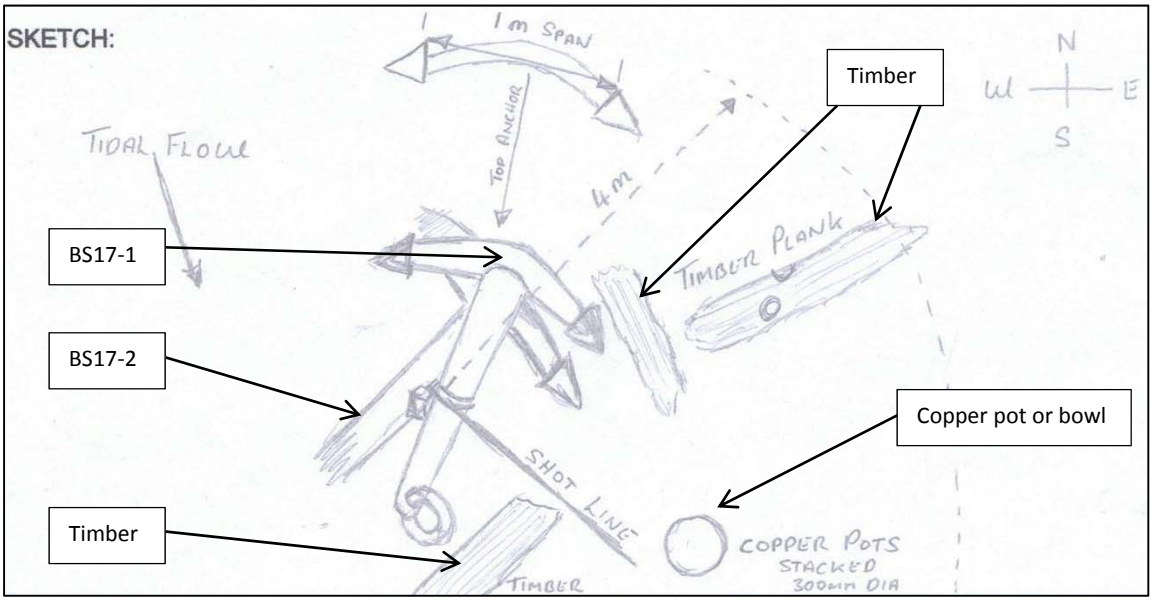


Figure 4: Sketch of anchors, timber and copper pot or bowl on the Barrel Site, 26th August 2017 (Sven Van Haelst – 20170826 – Form 11)

Figure 5: Copper pot or bowl on the Barrel Site, 26th August 2017 (Duncan Ross)(Image file: IMG_1934.JPG)

8.1.6 Divers Terry Vickers and Duncan Ross reported that as well as finding the two anchors at the bottom of the diver shot line (BS17-1 /BS17-2) they found an additional anchor 10.4m to the north (BS17-3). This anchor numbered BS17-3 also had timber associated with it (20170826_Form 5).

8.1.7 Closer examination of the 2017 multibeam sonar data of the Barrel Site suggested that the divers were not in fact diving on the barrels, but actually diving on an anomalies 27m to the south of the main cluster of barrels (see Figure 6). This anomaly most likely representing the two anchors (BS17-1 and BS17-2) is located at 51° 16.463 N; 001° 34.445 E (WGS84).

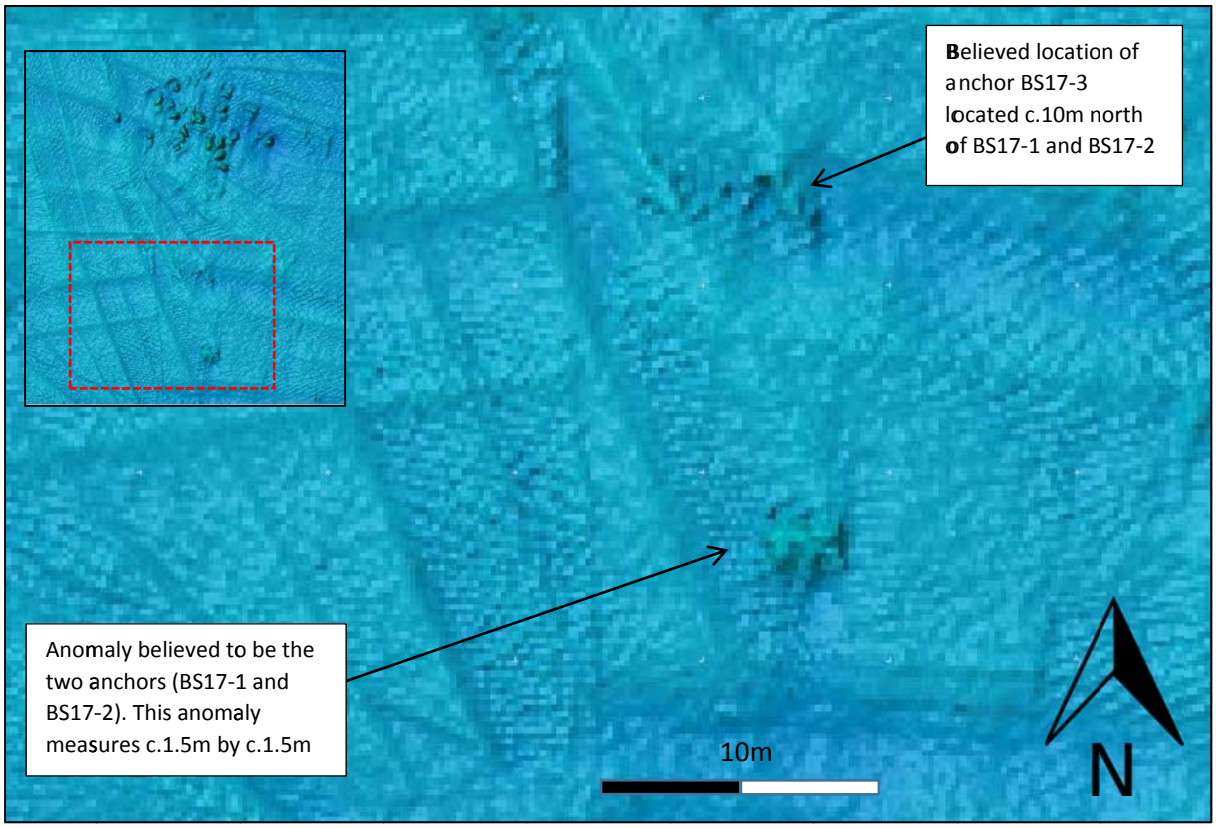


Figure 6: Believed position of BS17-1 and BS17-2 - from multibeam sonar survey (MSDS and PAS)

8.2 Fieldwork Results: The North-East (Gun) Site

8.2.1 - The area of investigation of the North-East (Gun) Site measures approximately 1,400 square metres of seabed, with a maximum distance of c.50m on a North-South axis and c.28m on an East-West axis (Figure 3). From interpretation of the multibeam survey data it was anticipated that the North-East (Gun) Site consisted of a number of guns lying flat on the seabed. Prior to diving investigation it was anticipated by MSDS Marine Ltd that there may be at least nine guns present in this area. Upon close examination the NAS identified a possible tenth target that may also be a gun (Figure 3). The co-ordinates for the centre of the North East (Gun) Site, taken from the 2017 multibeam survey are: 51° 16.545 N; 001° 34.645 E (WGS84) (Figure 1 & 3).

8.2.2 Diving operations undertaken on the 27th August 2017 until the 3rd September 2017 on the North-East (Gun) site were carried out during slack water periods. No diving took place on 30th August due to poor weather. Over the seven days a total of 37 dives were undertaken involving 13 divers amounted to 2926 minutes spent underwater (see Appendix 2).

8.2.3 On the 27th August 2017 the first task was to tie in a diving shot line to the site, which combined with a buoy on the surface would provide an access line to and from the seabed for the dive team. The diving shot was dropped using the co-ordinates 51° 16.543 N; 001° 34.656 E and was dragged approximately 7m north by the first divers to tie it into a large heavy object on the seabed (20170827_Form 12). This would ensure it was available to use for the duration of the diving operation. The divers reported that they had manged to tie the shot line on to an iron gu and that two additional guns appeared to also be present at this location (Figure 7).

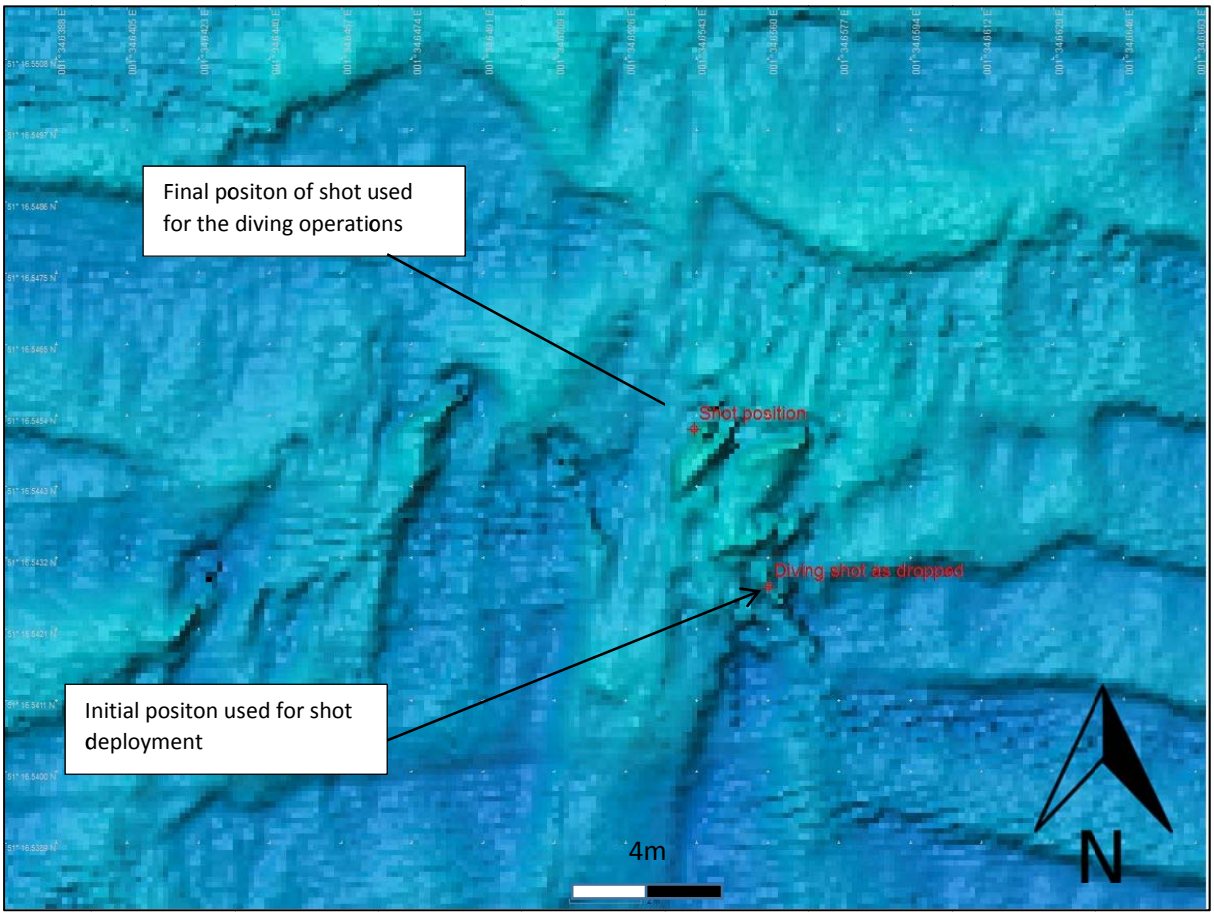


Figure 7: Position of the diving shot deployed on the Gun Site - from multibeam sonar survey (MSDS and PAS)

8.2.4 The dive team was made up of two professional underwater archaeologists, a commercial diver and an underwater photographer and was complemented by members of the Dutch and British diving community. Initially, all the divers were able to undertake a seabed acquaintance dive to get used to diving together in the poor conditions of the Goodwin Sands and to test their equipment configurations. Divers were not tasked to achieve anything on their first dives but were able to photograph or video features on the seabed should they wish.

8.2.5 Over the next seven days the dive team were divided into pairs and were tasked with exploring the seabed from the central location of the diving shot line which would be used for all descents and ascents. The fixed position and the use of the georeferenced 2017 multibeam survey meant that divers could be given specific distances and bearings to find possible anomalies from the geophysical data. The initial objectives were to navigate to, identify, label (see Appendix 3) and record the ten possible gun targets already suggested from the multibeam survey (Figure 11).

8.2.6 Whilst this may sound simple, it is actually a very difficult exercise to undertake in the dark and turbid conditions of the Goodwin Sands. As an example, a miscalculation of only 5 degrees over a distance of 30m would mean missing the target feature by as much as 3m, which being beyond the limit of visibility would mean that the divers would not be able to see the feature. As a result divers would swim out the target distance using a tape measure or knotted line and then arch left and then arch right to see if they quite literally bumped into the target feature.

8.2.7 If divers came across small finds such as concretions, timbers or other artefacts that would be possible to label they were provided with the appropriate numbered labels. The labels were provided by the main *Rooswijk* excavation team to ensure that they were unique identifiers (UIDs) (see Appendix 3) and would not be repeated within the main site survey and excavation.

8.2.8 **GS17-1 and GS17-2** - The guns identified as Possible Guns 5 &6 (Figure 3) were seen by divers on Dive 1 on the 27th August 2017 (20170827_Form 12), with one of the guns GS17-1 being used to tie the diving shot weight to the seabed for the duration of the investigation. Labels were added to GS17-1 around a trunnion (Figure 8) and GS17-2 around the muzzle (Figure 9), as well as to GS17-3 on the 28th August 2017 (20170828_Forms 23-24) (Figure 10). GS17-1 and GS17-2 were both measured with a total length, including cascabel, of between c.2.8m – c.2.9m. Being so heavily concreted it was not possible to obtain an exact measurement of the length of the guns.

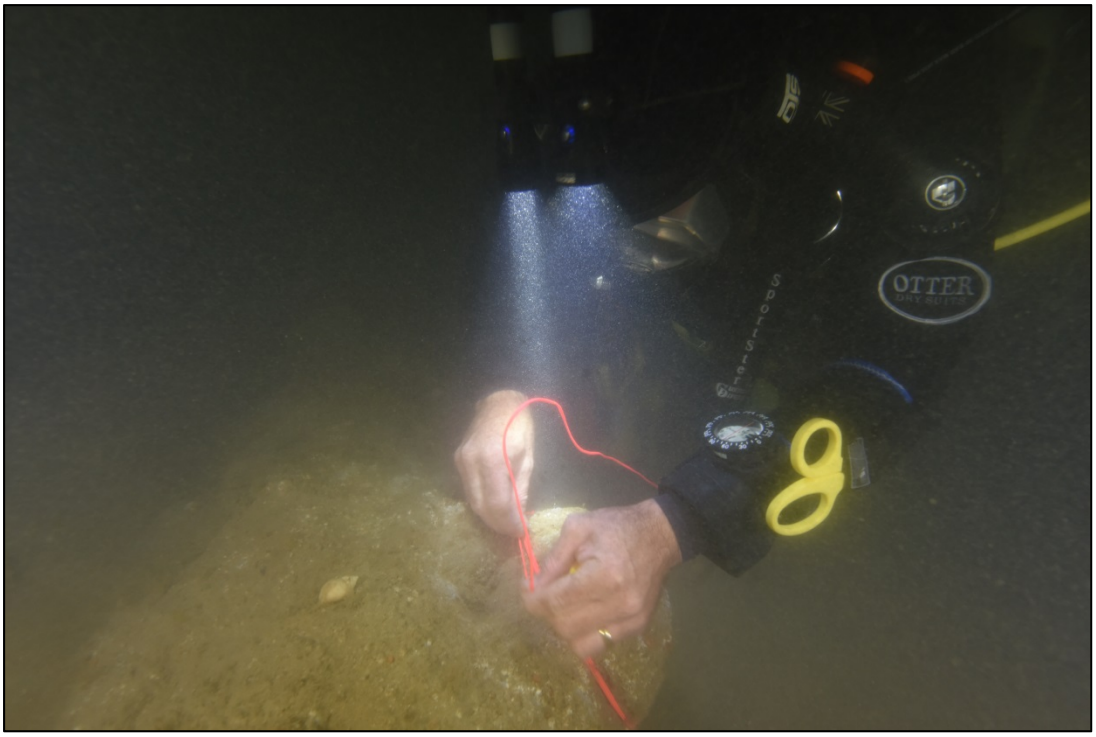


Figure 8: Diver attaching label to GS17-1 (Martin Davies (Image file: MED_8805.JPG)

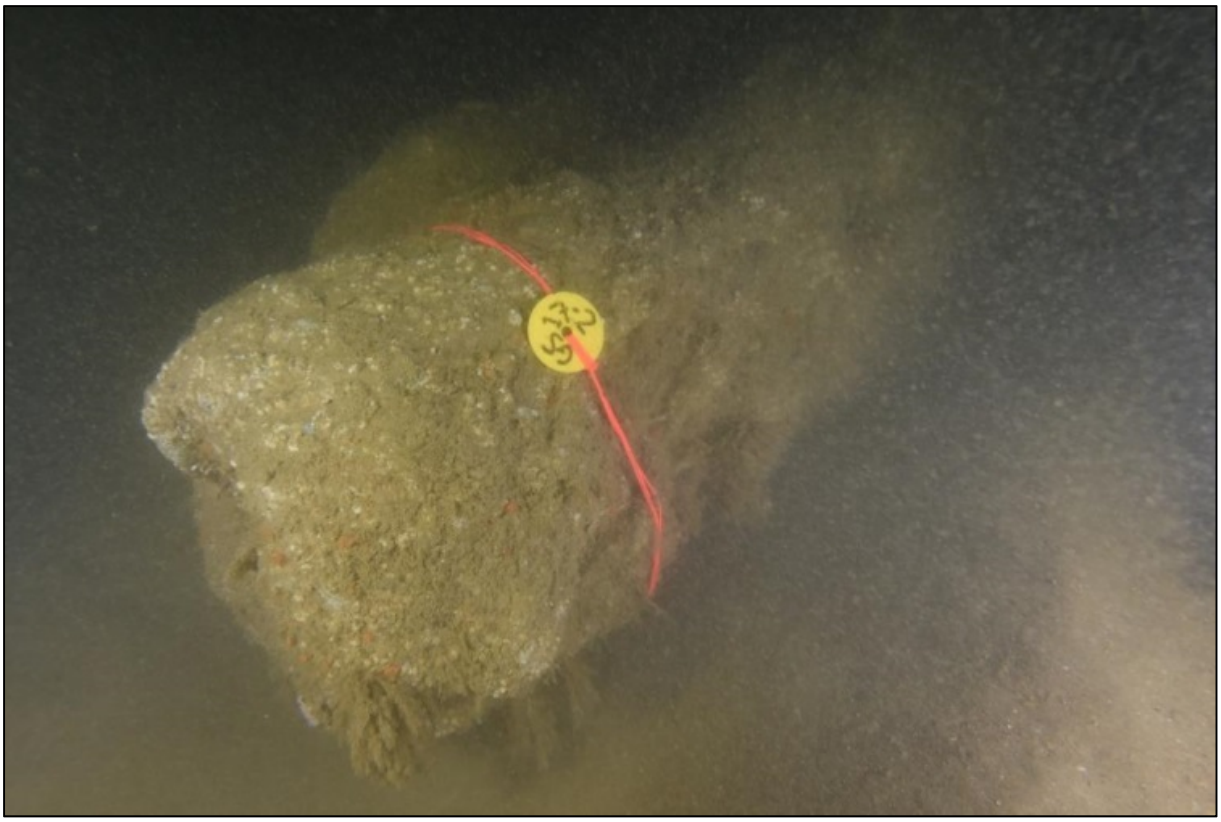


Figure 9: GS17-2 label attached around muzzle of gun (Martin Davies) (Image file: MED_8815.JPG)

Figure 10: GS17-3 label attached around the cascabel of gun (Martin Davies). Image file: MED_8819.JPG

8.2.9 **GS17-3** - The gun identified as Possible Gun 7 (Figure 3) was found divers on the 28th August 2017 (20170828_Form 24), just south of GS17-1 and GS17-2. This gun was labelled GS17-3 around its cascabel on the 28th August 2017 (20170828_Form 24) (Figure 10). GS17-3 was measured with a total length, including cascabel as being between c.2.8m – c.2.9m. Being so heavy concreted it is not possible to obtain an exact measurement of the length of the gun.

8.2.10 **GS17-14** - The gun identified as Possible Gun 8 (Figure 3) was found divers Richard Savenije and Edmund Fennema on the 28th August 2017 (20170828_Form 17), 14.6m south-west of GS17-1. This gun was labelled GS17-14. GS17-14 was measured with a total length, including cascabel as being c.2.8m (20170829_Form 26). Detailed measurements of GS17-14 were taken including c.0.37m muzzle diameter and c.0.65m base ring diameter (20170829_Form 26).

8.2.11 **GS17-10** – This gun was not identified on the multibeam sonar survey as a possible target. It was found by Mark Hobbs and Sven Van Haelst on Dive 1 on the 28th August 2017 (20170828_Form 38) (Figure 12). GS17-10 was believed to have been found c.3.9m west of GS17-1, orientated with its muzzle to the south and cascabel to the north. A later dive on the 1st September 2017 (Dive 4) showed GS17-10 to be south-west of GS17-1, rather than directly to the west.

8.2.12 **GS17-7** - The gun identified as Possible Gun 7 (Figure 3) was found divers Richard Savenije and Edmund Fennema on Dive 3 the 28th August 2017 (20170828_Form 14). It was labelled GS17-7. It was recorded as being located c.5.2m west of GS17-1, but was on a later dive it was confirmed as actually being to the south (Figure 12). The dimensions of GS17-7 were not measured during the investigation.

8.2.13 **GS17-5** – This gun was not identified on the multibeam sonar survey as a possible target. It was found divers Richard Savenije and Edmund Fennema on Dive 3 the 28th August 2017 (20170828_Form 14) at the same time as GS17-7. It was labelled GS17-5. It was initially recorded as also being located c.5.2m west of GS17-1, but as with GS17-7 it was confirmed as actually being to the south on a later dive (Figure 12). The dimensions of GS17-5 were not measured during the investigation.

8.2.14 **GS17-6** – This gun identified as Possible Gun 1 (Figure3) was found by divers Terry Vickers and Duncan Ross on Dive 2 on the 29th August 2017 (20170829_Form 29). It was found 24.9m north of GS17-1. The distance of c.25m compares favourably with the multibeam sonar survey data, although the bearing taken from *Site Recorder* suggests more likely 347 degrees from GS17-1 rather than 0 degrees. GS17-6 was measured by the divers as being c.2.4m long with a muzzle diameter of c.25cm. GS17-6 was subsequently measured again by Mark Beattie-Edwards on 31st August 2017 (Form 78) as being c.3m in length including cascabel, with a muzzle diameter of c.30cm (Figure 12)

8.2.15 **GS17-8** – The gun identified as Possible Gun 9 (Figure 3) was found by divers Mark Beattie-Edwards and Martin Davies on Dive 4 on the 1st September 2017 (20170901_Form 58). It was labelled GS17-8 around its cascabel. It was recorded as being located c.30m south-west of GS17-1, but was on a later dive it was confirmed as actually being to the south (Figure 12). GS17-8 was measured as being c.3m in length including the cascabel.

8.2.16 **GS17-9** - This gun identified as Possible Gun 4 (Figure 3) was found by Mark Hobbs and Sven Van Haelst on Dive 5 on the 29th August 2017 (20170829_Form 36) (Figure 12). GS17-9 was found c.7m west of GS17-1, orientated with its muzzle to the south and cascabel to the north. The dimensions of GS17-9 were not measured during the investigation.

8.2.17 Whilst a number of timbers and other features (most commonly concretions) were found and labelled during the investigation of the Gun Site (Figure 14) (see Appendix 3), the most intriguing feature to be located was F0403. The feature was identified on the multibeam sonar as Possible Gun 3 (Figure 3). F0403 was first found by Sara Hasan and Monica Jong on the 1st September 2017 and labelled on the 2nd September 2017. The divers were able to lay a search line 15m on a bearing of 290 degrees from GS17-9 (Figure 14). By using GS17-9 rather than GS17-1 it was possible to shorten the distance from 22m to 15m and thereby increase the chance of success.

8.2.18 Initially recorded at c.2m in length (20170901_Form53) it was thought that F0403 may be another iron gun, it was then thought it may be the remains of a long chest as found on the main excavation site. However on the last day of the investigation it became apparent that F0403 was most likely the remains of coherent wooden ships structure perhaps a deck beam or ledge and deck planking. F0403 was photographed and filmed on the 2nd and 3rd September by Martin Davies (20170902_Form 77 and 20170903_Form 84). Unfortunately due to poor visibility underwater the photogrammetry survey could not be processed successfully. Using digital photographs and images captured from the video footage it was possible to mosaic together eight images to illustrate the western edge of the feature (Figure 15 and). The plan view of the upper most part of F0403 was also recorded in this way (Figure 16).

Shot to Possible Gun 1

25.55m / Bearing 348^0

Shot to Possible Gun 2

23.37m / Bearing 341^0

Shot to Possible Gun 3

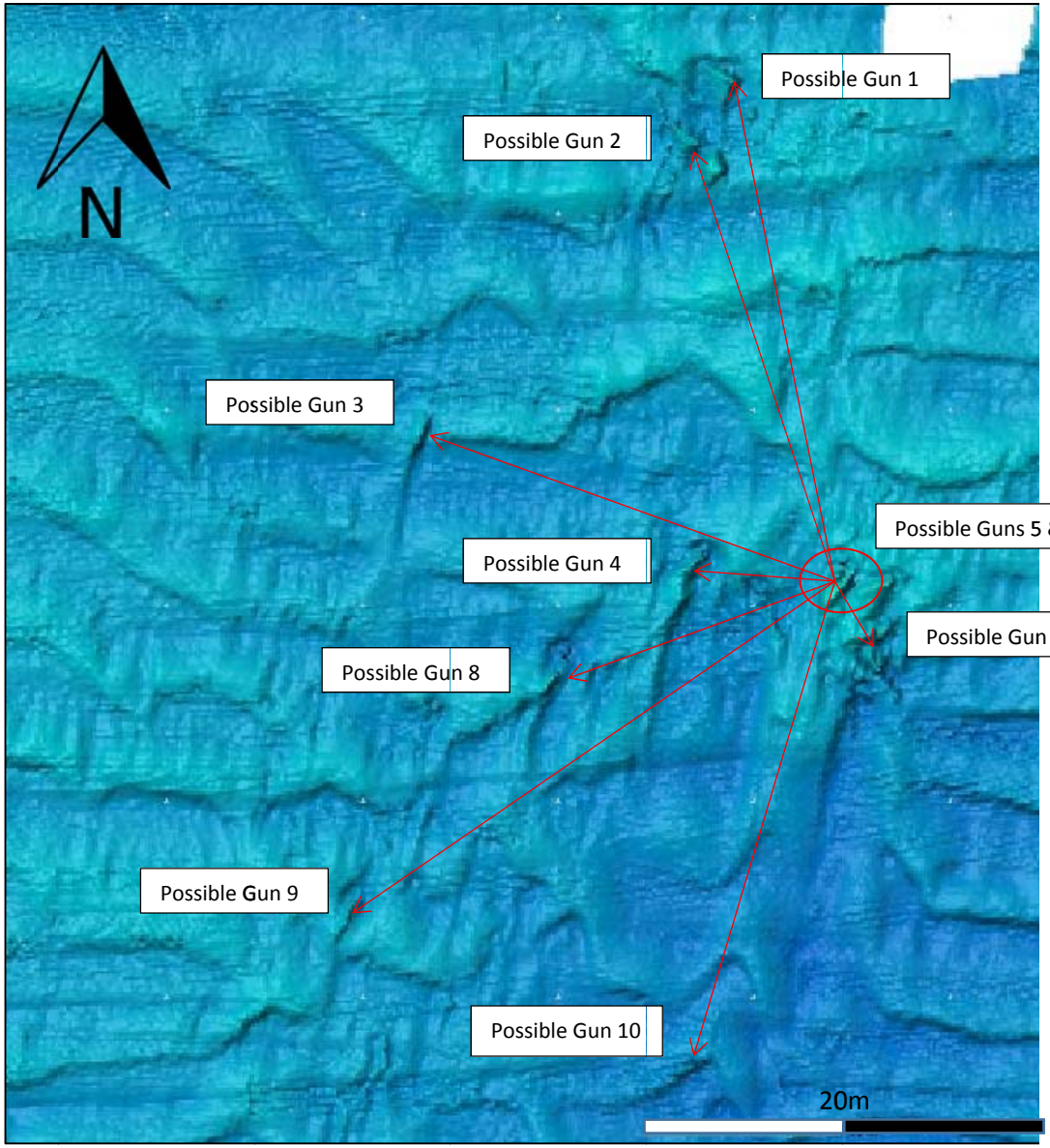
21.96m / Bearing 288^0

Shot to Possible Gun 4

6.86m / Bearing 271^0

Shot to Possible Gun 5 and 6

0.00m / Bearing N/A



Shot to Possible Gun

5.64m / Bearing 156^0

Shot to Possible Gun 8

15.53m / Bearing 248^0

Shot to Possible Gun 9

30.71m / Bearing 234^0

Shot to Possible Gun 10

26.25m / Bearing 196^0

Figure 11: The North-East (Gun) site, with locations of ten possible guns, including distances and bearings from diving shot - with 2017 multibeam sonar survey (MSDS and PAS)

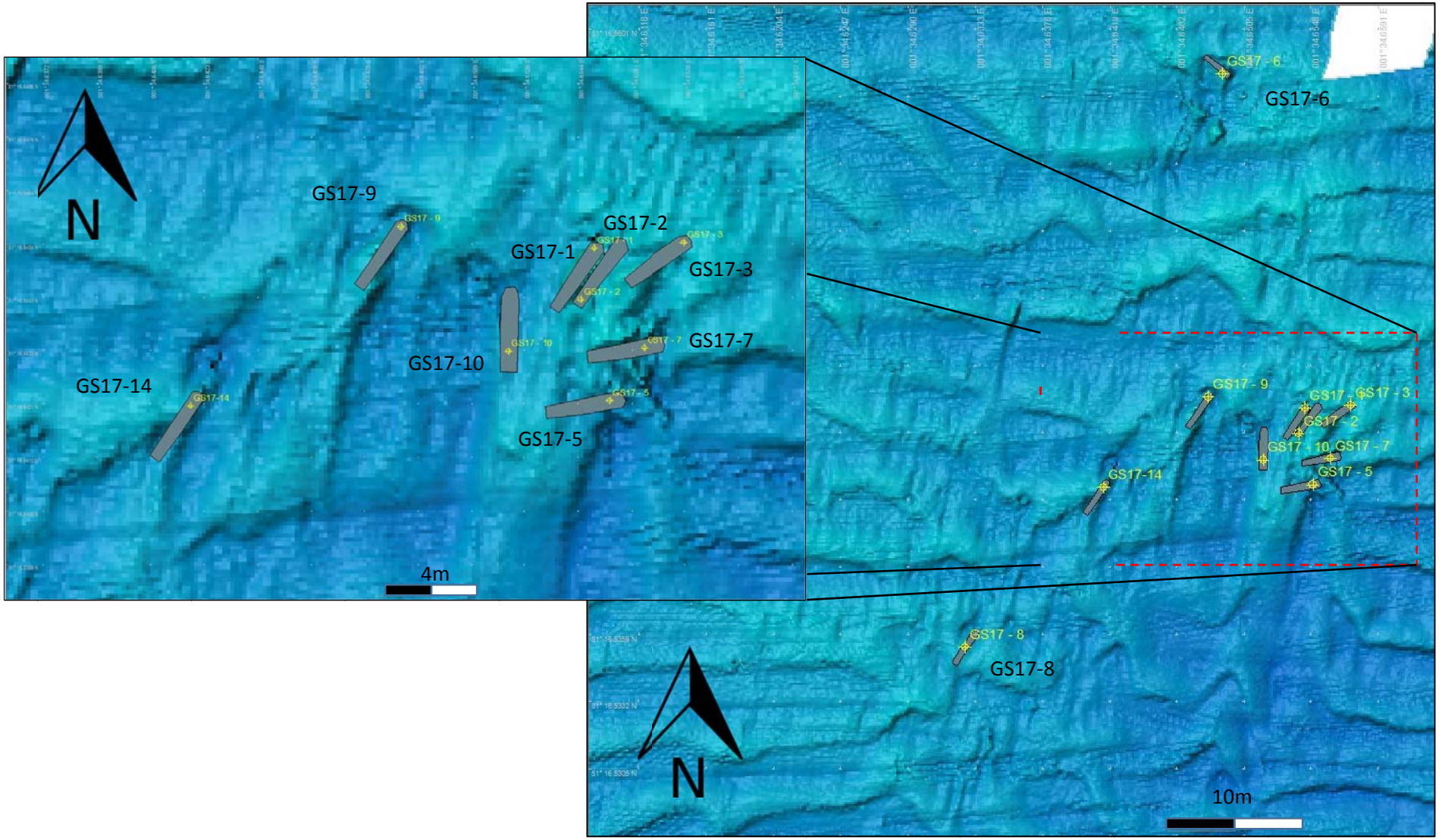


Figure 12: The North-East (Gun) site, with locations and orientations of ten iron guns found by the 2017 SCUBA Project dive team – with multibeam sonar survey (MSDS and PAS)

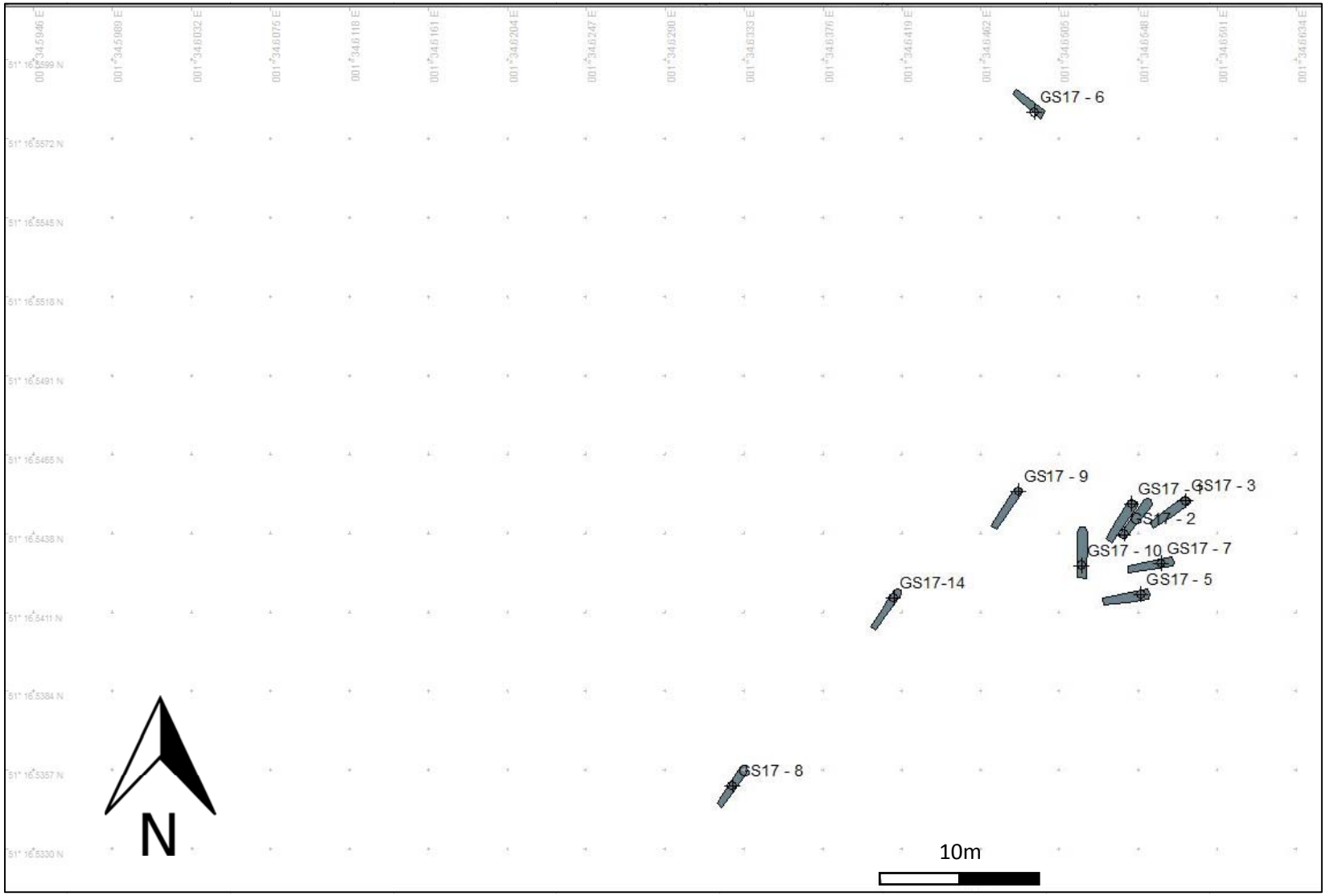


Figure 13: The North-East (Gun) site, with locations and orientations of ten iron guns found by the 2017 Rooswijk SCUBA Project dive team

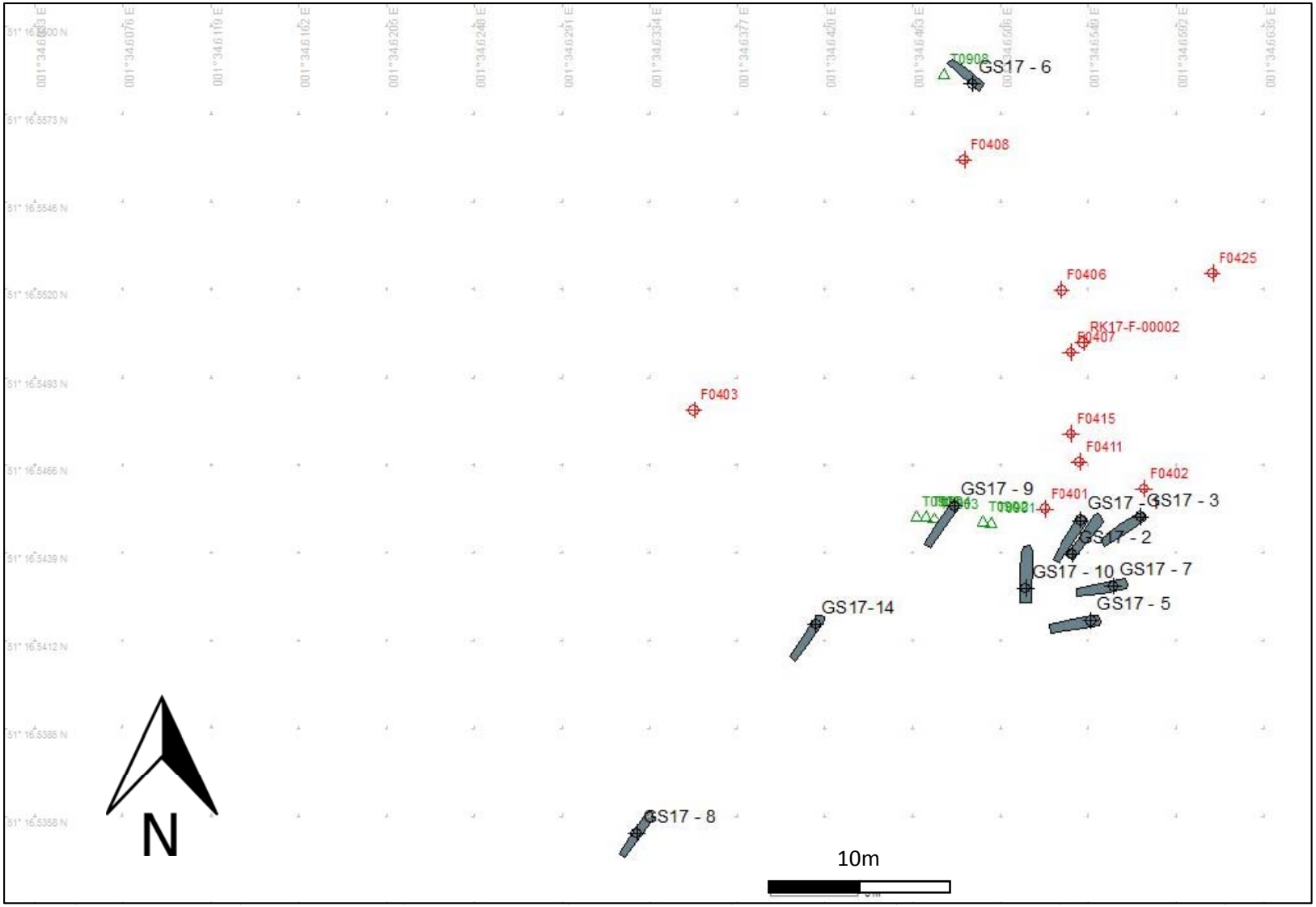


Figure 14: The locations of other features and timbers found by the 2017 Rooswijk SCUBA Project dive team

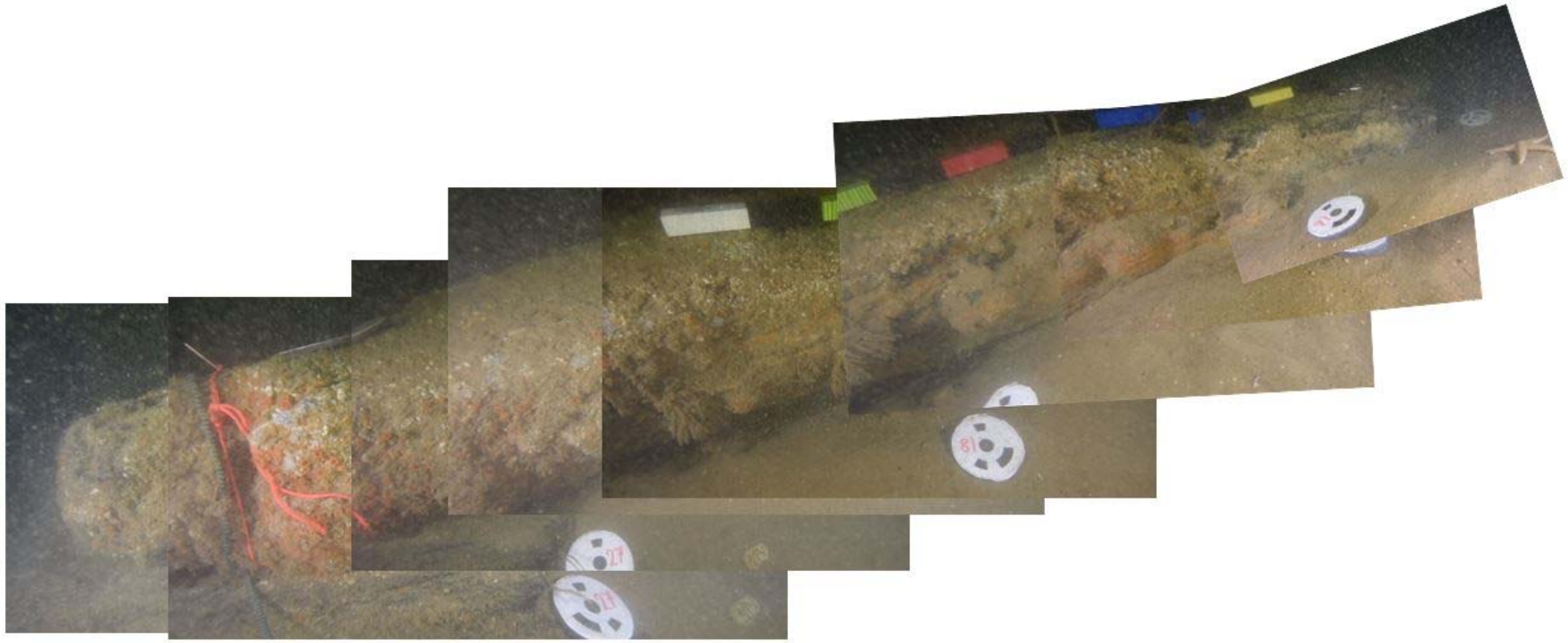


Figure 15: Mosaic of western edge of F0403 with 1m scale bar and photogrammetry targets (Martin Davies). (Video file MED_9663.MOV)

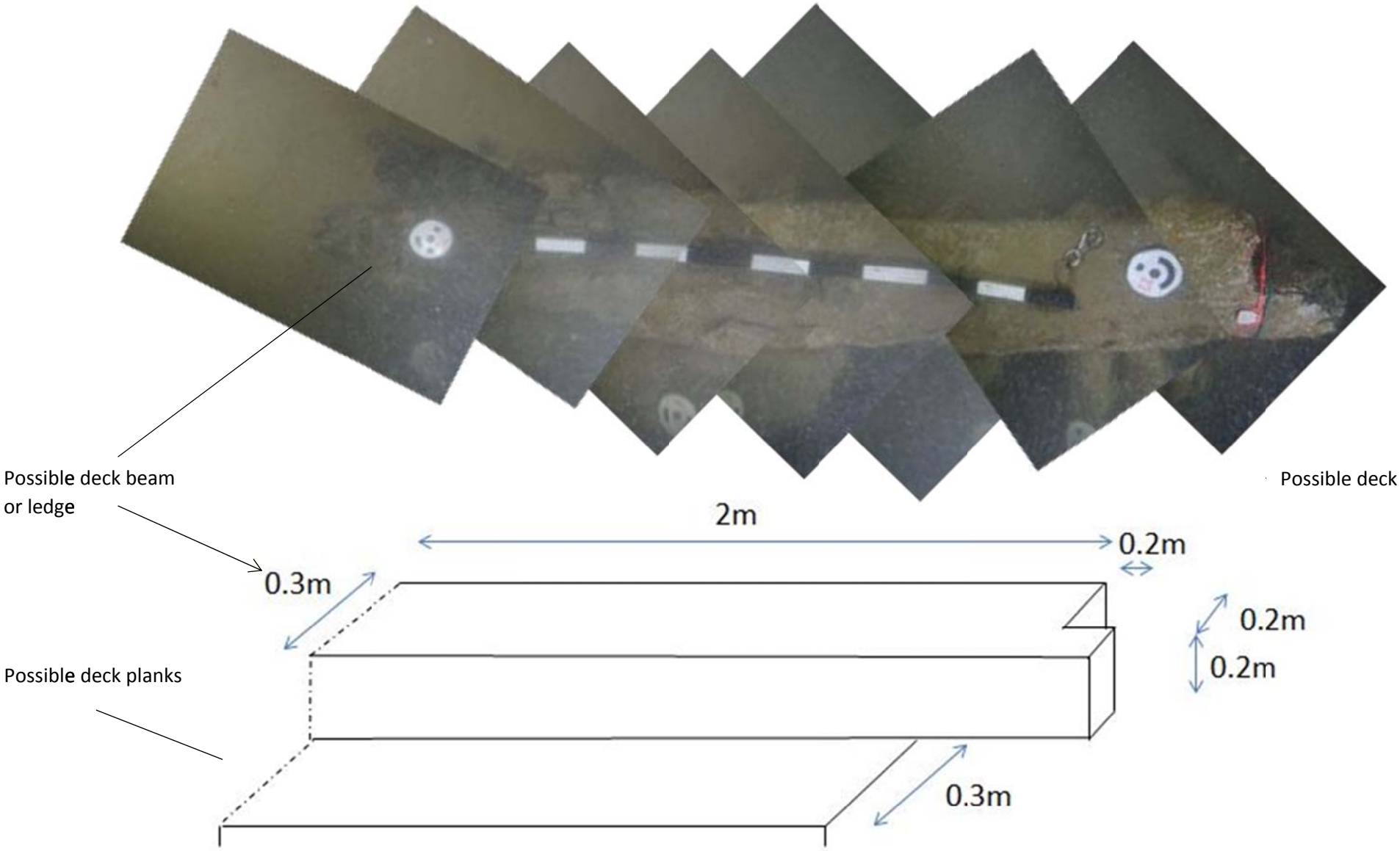


Figure 16: Mosaic of top of F0403 with 1m scale bar and photogrammetry targets (Martin Davies) (20170902_Dive4) and measured sketch by Sara Hasan ((Form 66)

9.0 Discussion

9.1.1 The discovery of three new anchors on the North (Barrel) Site, with two of them on top of each other and with a third only 10m away, suggests that these were spare anchors or were lost as the ship broke up during the storm that sank the Rooswijk. The anchors found on the North (Barrel) Site lie c.100m North-West of the main concentration of wreck material. Although the SCUBA project dive team did not see any concreted barrels on the site, it is known that they are just 13m further north of anchor BS17-3 and probably landed on the seabed in the same wrecking event as the anchors.

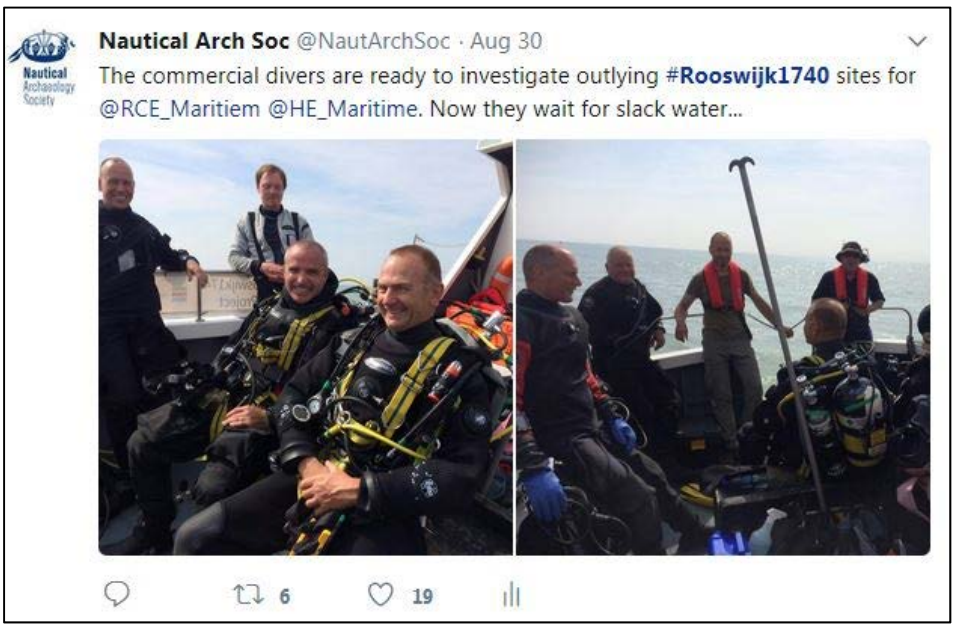
9.1.2 The discovery of 10 iron guns on the North-East (Gun) Site, one substantial composite section of ships timbers and numerous concretions and isolated timbers suggests that this material is most likely also from the Rooswijk. The guns are all c.2.8-c.3m long (including concretions) which compares favourably to the size of the iron guns found on the main site. Further research and more detailed recording of the collection of Guns at the North-East (Gun) Site is required.

9.1.3 As a result of the work undertaken by the SCUBA project it has already been possible to provide information to Historic England for their evaluation of the size of the designation area around the Rooswijk protected wreck. With large amounts of wreck material believed to be contemporary to the Rooswijk, but lying outside the existing designation area, it was recommended by Historic England that the Restricted Area be increased by 75m around position 51.274583, 1.576067.

10.0 Public Engagement

10.0.1 The fourth and final objective of the *Rooswijk* SCUBA project, like the main project, was to ensure that it had outreach and public engagement at its heart.

10.0.2 At the discretion of RCE and HE it was agreed that the NAS would post updates on social media, alongside those from the main project. The project-specific hashtag #Rooswijk1740 was used by the team on Twitter to great success.



Nautical Arch Soc
@NautArchSoc

Introducing the #rooswijk1740 SCUBA team of British and Dutch, recreational and commercial divers for this week! @RCE_Maritiem @HE_Maritime

8:04 PM - 28 Aug 2017

4 Retweets **15** Likes

Nautical Arch Soc @NautArchSoc · Aug 30

Our Dutch and British recreational divers are having a great time being part of the **#rooswijk1740** diving team! @RCE_Maritiem @HE_Maritime

6

Nautical Arch Soc
@NautArchSoc

Commercial divers from #Rooswijk1740 SCUBA team. Looking happy- must have found something underwater! @HE_Maritime @RCE_Maritiem @MSDSMarine

12:51 PM - 4 Sep 2017

2 Retweets **14** Likes

Nautical Arch Soc @NautArchSoc · Aug 30

Learning how to measure a tiny cannon in preparation for recording the real thing! **#Rooswijk1740** @RCE_Maritiem @HE_Maritime @MSDSMarine

5 15

Maritiem Programma @RCE_Maritiem · Sep 11

Recreational divers and archaeologists diving together on **#Rooswijk1740**
@HE_Maritime @MSDSMarine maritime-heritage.com/content/rooswi...

9 20

Nautical Arch Soc
@NautArchSoc

After diving - the paperwork must be done! Divers fill in their logs in: 'Terschelling' crew quarters, #Rooswijk1740 lab, or at base camp!

9:43 PM - 1 Sep 2017

3 Retweets **14** Likes

10.0.3 After the project, one of the volunteer divers Duncan Ross, kindly wrote an article on his experience of taking part in the SCUBA project for the NAS Members Newsletter which was published online in November 2017.

Five Days with the NAS

You know when you have done something really special, because you can't stop thinking about it, says ***Duncan Ross****. Here he reports on five magical days with the NAS in southern England in late August.*

Diving two of the UK's protected wrecks— the *Holland 5* submarine and the Norman's Bay wreck— as well as volunteering on the *Rooswijk 1740* support project: that's special. Replaying memories over and over, hoping they never fade—that for me is the easiest way to sum up the end of August this year.

The adventure began with Protected Wrecks Day, a unique chance for divers to visit underwater sites of historical significance under the guidance of knowledgeable and enthusiastic NAS staff. Upcoming trips can be found on the NAS website along with booking information. This particular trip cost £70. Due to the diving conditions, recent experience of depths up to 30m in UK tidal waters in low visibility is essential, as is having PADI Rescue Diver (or equivalent) qualification and an independent air source that is separate from one's main air supply. A nitrox qualification is also beneficial, as this will extend bottom time on the *Holland 5*, which is where the day began.

We set out from Eastbourne at 6.30am on a beautiful August day to catch the early morning slack tide. Along the way, as divers drink tea and get to know each other, no one mentions the unbelievably good weather too much, just in case we jinx ourselves and a hurricane suddenly blows in. The dive briefing is thorough and fascinating. Underwater navigation is explained, features of interest are pointed out and light is shed on facts, such as John Phillip Holland's initial intentions to sell his design to the Crown's enemy, the Fenian Brotherhood, before selling it to the Royal Navy. The exact reasons for the sinking of the submarine are not known, but it was under tow at the time. There was no loss of life.

A little personal research conducted beforehand can make the dive even more interesting. The internet is such a useful tool in this respect: pictures, facts, you name it. Football fans beware though! *Holland 5* brings up several hits for score lines too—so if you are sensitive and your team has suffered such a defeat at the hands of the Dutch national team, bad memories may be brought to the fore!

Top: The Holland 5 Submarine (Duncan Ross).
Middle: The bow torpedo tube (Duncan Ross).
Bottom: Inspecting the propellers (Duncan Ross).

After the shot line is dropped, one enters the water full of intrigue. The sub is in remarkable condition and makes for a memorable dive. Lovers of sea life will also be contented with schools of pouting and of bib shimmering by, as well as the odd elusive conger eel hanging around. One eel is said to have made a home in the torpedo tube—so take care when peering inside!

Next, the Norman's Bay wreck. The identity of this vessel is not known, but has been narrowed down to a few contenders – possibly now even one. The general consensus is that it is a Dutch vessel from the Battle of Beachy Head, which was fought in July 1690 between the Anglo-Dutch navy and their mutual French enemy.

Although the weather was stunning and the conditions near flat-calm, the visibility at the seabed was down to around 30cm: such is the hit-and-miss nature of diving around UK shores. The murk did not lessen our excitement, however, and in some ways it increased the mystery. We descended to around 12m, to a murky green seabed which we knew was strewn with cannon, along with one large anchor at the centre of the site.

A waterproof site map provided by the NAS, together with fixed guide lines and good navigational skills help immeasurably here. I have never seen cannon underwater before, so this was an unique experience for me, and it did not disappoint. I did not realise how enormous these weapons—24 and 18 pounders, I was informed later— would be. They were around 3 m long with cascabels about the same diameter as a car wheel. One can only imagine the struggle of the sailors having to shift them around the gun deck, not to mention the firepower unleashed from such a weapon.

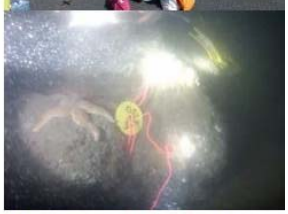
All that excitement on a single day was followed, not by rest, but by four days on the *Rooswijk* project. The *Rooswijk* was a Dutch East India Company (VOC) ship that sank on its way from the Netherlands to Batavia, modern day Jakarta, in 1740. Fully-laden, the ship came to grief on the treacherous Goodwin Sands off Kent, in southeast England. All hands were lost.

Top: Overview of the Norman's Bay Protected Wreck site (Courtsey NAS)
Bottom: A cannon muzzle pointing skywards (Duncan Ross).

Top: Inspecting a cannon trunnion (Duncan Ross).
Bottom: A team of happy divers (Duncan Ross).

Taking my dream of getting involved in some real maritime archaeology from fantasy to reality was something I was never sure would happen. I have the passion and ambition but with only a few NAS courses under my (weight) belt, and no formal training, I was not sure how I would do it. Since attending the NAS's Introduction course six years ago in a cold inland quarry in October, I have been focusing on joining a real underwater project. I looked at the steps I would need to take in order to work alongside actual archaeologists. As well as being aware of basic marine archaeology techniques and furthering my NAS training, I would have to be trained to PADI Rescue Diver level or equivalent, and have an independent air source, separate from my main tank (or other twinsets etc). Diving is not cheap – training, trips, equipment, repairs, servicing – you name it. Week-by-week something needs attending to and there is always some more appropriate piece of kit available. So this was not going to be a quick journey.

Top: Terschelling, the project's research vessel (Courtsey NAS).
Bottom: A stack of copper pots, half buried in the seabed(Duncan Ross).



Top: NAS support team of commercial and recreational divers (Duncan Ross).
Bottom: A cannon cascabel after being labelled (Duncan Ross).

Seeing the advert for volunteers wanted for the *Rooswijk 1740* support project in June this year filled me with excitement. I had already booked on to the PWD in August, and the *Rooswijk* support project started the following day: it seemed like perfect timing, and indeed it was. After waiting weeks for a reply to my application I was officially asked to join the project - only one of eight lucky divers to be chosen!

Under the guidance of NAS professionals, and working alongside commercial divers, our remit was to further investigate two outlying sites which are thought to be linked in some way to the main wreckage. One site (the North site) was thought to contain several concreted barrels, and the other site (Gu123n) to contain several cannon. We were to tag and note the position of any significant finds. The weather for the duration of my involvement was uncharacteristically brilliant for the UK—although at the bottom one would not know this. Hardly any sunlight penetrated to the seabed, so torches were required on every dive.

In our four days of diving in fairly challenging tidal conditions—sometimes in zero visibility and operating only by touch—my partner and I discovered an anchor and a cannon – both around 2–3 metres in length. Two Dutch volunteers and commercial divers also found many, many items. Several objects discovered were unidentifiable due to heavy concretion, but at some point in the future perhaps they will be further investigated. To lay one's eyes on something not seen for nearly 250 years is a very humbling experience—not least because these items were the result of a violent maritime tragedy in which many people died. After each dive, we completed dive logs, video logs and sketches in order for the NAS to compile a coherent record and initial site map.

Experiencing the day-to-day workings of an archaeological project, the hard work required, the logistics, the multitude of staff and the setbacks involved—due to tides, equipment, weather—was a real insight. A real respect and understanding starts to emerge when one considers how many dives and how much persistence and dedication it must take to record and excavate a site. Sometimes so little can actually be accomplished due to various factors. The mind really boggles when one imagines the logistics behind an excavation such as the *Mary Rose* and subsequent conservation project.

Boarding *de Tercheling*, the main research vessel was a real treat: it had been used previously in the excavation of the *Mary Rose*. So was visiting the main facility in Ramsgate. To see precious archaeological finds freshly brought up and in various stages of conservation was an educational and inspiring experience.

The sheer scale of the *Rooswijk 1740* project is impressive, and clearly demonstrates the importance of the discovery and excavation to the Netherlands, and indeed the UK. To be involved felt like a rare opportunity, something which I can only hope I will get to repeat one day. The devotion, professionalism and high level of expertise of all staff and people involved was clearly evident, and the generosity and patience shown to us amateurs was always forthcoming. Apart from coming away with a special set of memories and new friendships, I hope I was able to add a valid contribution to the project. I feel much more confident that I could take part in another project or even think about initiating my own at some level. With plenty of maritime history in my part of the UK—northwest England and north Wales—surely I can come up with something. I am also considering formal archaeology education in the future.

11.0 Conclusion

11.0.1 The main aims of this project were: to improve understanding and knowledge of the sites; to gather information which will be of use particularly in the management of remains to be left in-situ; and, to undertake public engagement through inclusion of volunteer recreational divers.

11.0.2 The aims and objectives were as follows:

- To undertake SCUBA investigations focused on the North (Barrel) Site, the East Site and the North-East (Gun) Site in order to improve understanding of these areas of wreckage, focused particularly on a collection of cannon identified on geophysical survey data in 2017, lying outside the current designation boundaries and to provide management advice on these remains;

- To feed the results of these surveys into those of the wider Rooswijk Protected Wreck Site, Goodwin Sands: Archaeological Excavation and Preservation project and associated project aims, which include improved knowledge and management for the Rooswijk;

- To undertake the SCUBA project alongside the SSDE excavation, to increase productivity and efficiency; and

- To ensure the SCUBA project, like the main project, has outreach and public engagement at its heart.

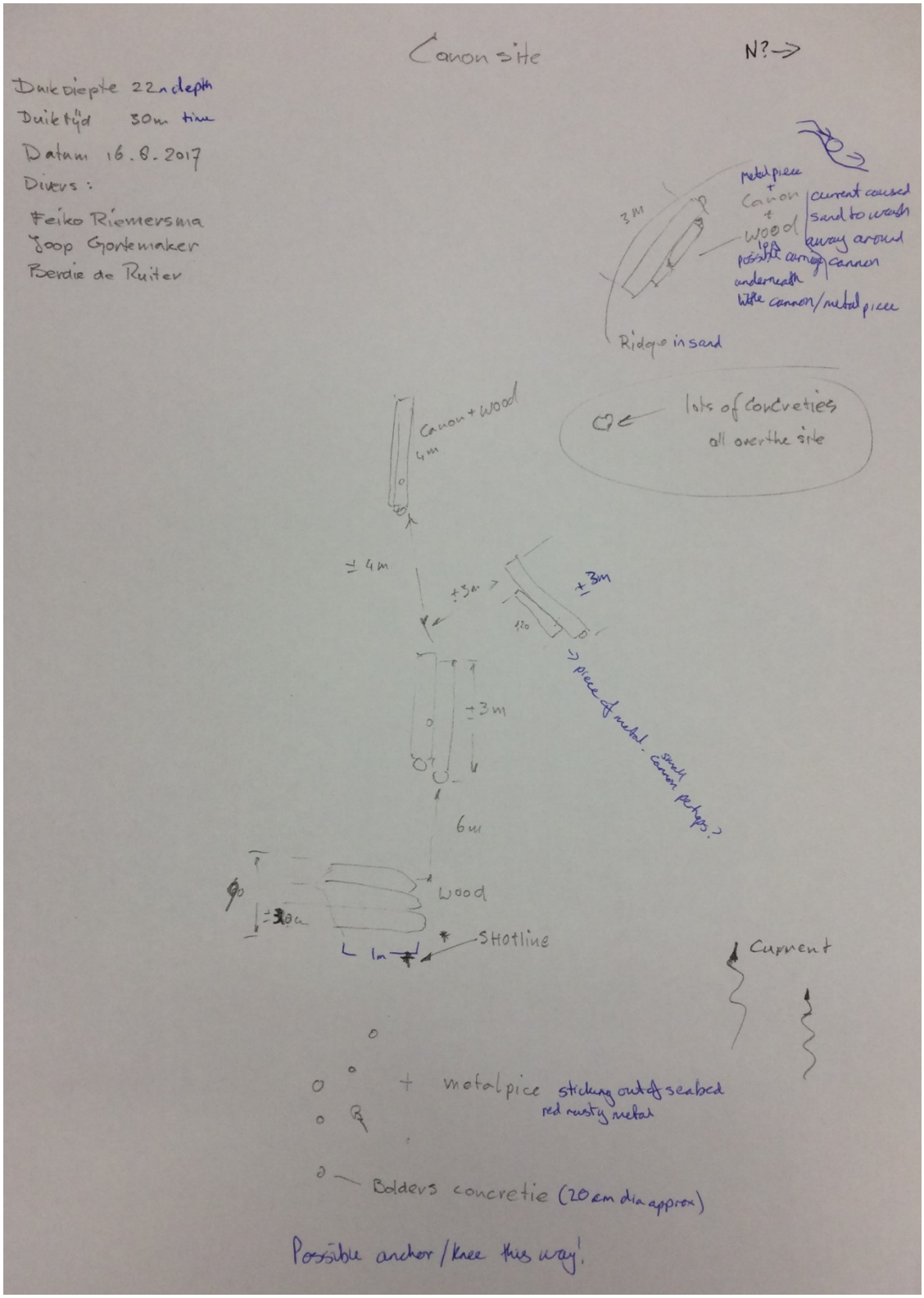
11.0.1 The SCUBA project successfully managed to achieve its objectives, bar the investigation of the East Site. The East Site was not dived due to safety concerns connected to the mooring of the main excavation support vessel, *Terschelling*. Whilst it was only possible to dive on the North (Barrel) Site once, and even though the divers did not actually dive on any barrels, they were able to confirm the presence on the seabed of three new anchors, which may have been from the *Rooswijk*. It is hoped that future investigations will be able to record the North (Barrel) Site including the three anchors in more detail.

11.0.2 The greatest success of the SCUBA project was utilising a mixed team of experienced professional archaeologists, photographer and divers, along with nine volunteer divers, most of whom had very little archaeological training before joining the project. Whilst it may have been more productive to have limited the volunteer team to four divers for the duration of the investigation it is accepted that widening participation had a positive impact for those involved and for the profile of the project.

11.0.3 The team were incredibly lucky with the surface weather conditions, losing only a single days diving due to strong winds. However the underwater conditions of short tidal windows and poor visibility made the work challenging. Unfortunately, despite the team's best efforts it was not possible to get photogrammetry results from either the guns or the wooden hull structure (F0403) on the North-East (Gun) Site. It is hoped that future investigations will be able to record the North-East (Gun) Site in more detail.

11.0.4 We would like to thank all the SCUBA Project Team including the volunteers, our skipper, an especially MSDS Marine staff Sally Evans and Mark James.

12.0 Appendix 1: Sketch of Gun Site, 16th August 2017



Sketch of the Gun Site by divers Feiko Riemersma, Joop Gontemaker and Berdie de Ruiter from the 16th August 2017.

13.0 Appendix 2: Dive Operations 26th-August – 3rd September 2017

26th August 2017		Dive Times		Rooswijk Barrel Site	
Dive No	Name	Time In	Time Out	Total Time (mins)	Max Depth (m)
1	Mark Hobbs	13:20	13:50	30	23.6
1	Sven Van Haelst	13:20	13:50	30	23.6
2	Richard Savenije	13:45	14:14	29	24
2	Edmund Fennema	13:45	14:14	29	24
3	Mark Hobbs	18:57	19:37	40	21.9
3	Sven Van Haelst	18:57	19:37	40	21.9
4	Richard Savenije	19:03	19:34	37	22
4	Edmund Fennema	19:03	19:34	37	22
5	Terry Vickers	19:46	20:20	34	22
5	Duncan Ross	19:46	20:20	34	22
6	Mark Beattie-Edwards	19:54	20:32	36	22
6	Martin Davies	19:54	20:32	36	22
Total	**6**			**412**	

27th August 2017		Dive Times		Rooswijk Gun Site	
Dive No	Name	Time In	Time Out	Total Time	Max Depth (m)
1	Mark Hobbs	14:18	14:35	17	23.6
1	Sven Van Haelst	14:18	14:35	17	23.6
2	Richard Savenije	14:51	15:09	18	24
2	Edmund Fennema	14:51	15:09	18	24
3	Terry Vickers	14:43	15:18	36	25.2
3	Duncan Ross	14:43	15:18	36	25.2
Total	**3**			**142**	

28th August 2017		Dive Times		Rooswijk Gun Site	
Dive No	Name	Time In	Time Out	Total Time	Max Depth (m)
1	Mark Beattie-Edwards	08:08	08:47	39	22
1	Martin Davies	08:08	08:47	39	22
2	Richard Savenije	08:14	08:50	36	22
2	Edmund Fennema	08:14	08:50	36	22
3	Terry Vickers	08:54	09:34	40	21.9
3	Duncan Ross	08:54	09:34	40	21.9
4	Mark Hobbs	09:07	09:40	37	20.9
4	Sven Van Haelst	09:07	09:40	37	20.9
5	Mark Beattie-Edwards	14:38	15:12	33	23
5	Martin Davies	14:38	15:12	33	23

6	Richard Savenije	14:46	15:12	26	24
6	Edmund Fennema	14:46	15:12	26	24
7	Terry Vickers	15:15	15:42	27	24
7	Duncan Ross	15:15	15:42	27	24
Total	**7**			**476**	

29th August 2017		**Dive Times**		**Rooswijk Gun Site**	
Dive No	**Name**	**Time In**	**Time Out**	**Total Time**	**Max Depth (m)**
1	Mark Hobbs	07:56	08:44	48	22.7
1	Sven Van Haelst	07:56	08:44	48	23
2	Terry Vickers	08:05	08:51	46	22.3
2	Duncan Ross	08:05	08:51	46	22.3
3	Richard Savenije	08:47	09:31	44	22
3	Edmund Fennema	08:47	09:31	44	22
4	Mark Beattie-Edwards	09:05	09:51	46	21.9
4	Martin Davies	09:05	09:51	46	21.9
5	Mark Hobbs	15:25	16:00	35	22.9
5	Sven Van Haelst	15:25	16:00	35	22.9
6	Richard Savenije	15:49	16:17	28	22
6	Edmund Fennema	15:49	16:17	28	22
7	Mark Beattie-Edwards	16:12	16:41	29	22
7	Martin Davies	16:12	16:41	29	22
Total	**7**			**552**	

31st August 2017		**Dive Times**		**Rooswijk Gun Site**	
Dive No	**Name**	**Time In**	**Time Out**	**Total Time**	**Max Depth (m)**
1	Mark Hobbs	09:33	10:24	51	22.4
1	Sven Van Haelst	09:33	10:24	51	22.4
2	Rob Konings	09:45	10:20	35	23.2
2	Adam Malkowski	09:45	10:20	35	23.2
3	Monica Jong	10:31	11:08	37	22
3	Mike Furguson	10:31	11:08	37	22
4	Mark Beattie-Edwards	10:40	11:31	51	22
4	Martin Davies	10:40	11:31	51	22
Total	**4**			**348**	

1st September 2017		**Dive Times**		**Rooswijk Gun Site**	
Dive No	**Name**	**Time In**	**Time Out**	**Total Time**	**Max Depth (m)**
1	Mark Hobbs	10:21	11:08	47	22.8

1	Sven Van Haelst	10:21	11:08	47	22.8
2	Rob Konings	10:32	10:21	56	22.9
2	Adam Malkowski	10:32	10:21	56	22.9
3	Monica Jong	11:22	12:14	52	22.4
3	Sara Hasan	11:22	12:14	52	22.4
4	Mark Beattie-Edwards	11:37	12:19	42	22.5
4	Martin Davies	11:37	12:19	42	22.5
5	Mark Hobbs	12:46	13:22	36	21.8
5	Sven Van Haelst	12:46	13:22	36	21.8
Total	**5**			**466**	

2nd September 2017		**Dive Times**		**Rooswijk Gun Site**	
Dive No	**Name**	**Time In**	**Time Out**	**Total Time**	**Max Depth (m)**
1	Mark Hobbs	12:03	12:43	40	22.6
1	Sven Van Haelst	12:03	12:43	40	22.6
2	Monica Jong	12:23	13:02	38	22.9
2	Sara Hasan	12:23	13:02	38	22.9
3	Rob Konings	12:57	13:52	55	22.9
3	Adam Malkowski	12:57	13:52	55	22.9
4	Mark Beattie-Edwards	13:38	14:19	41	21.5
4	Martin Davies	13:38	14:19	41	21.5
5	Mark Hobbs	14:37	15:14	37	22.6
5	Sven Van Haelst	14:37	15:14	37	22.6
6	Sara Hasan	14:51	15:29	38	20.8
6	Monica Jong	14:51	15:29	38	20.8
Total	**6**			**498**	

3rd September 2017		**Dive Times**		**Rooswijk Gun Site**	
Dive No	**Name**	**Time In**	**Time Out**	**Total Time**	**Max Depth (m)**
1	Mark Hobbs	13:35	14:15	40	22.3
1	Sven Van Haelst	13:35	14:15	40	22.3
2	Monica Jong	13:52	14:39	47	22.6
2	Sara Hasan	13:52	14:39	47	22.6
3	Rob Konings	14:28	15:22	54	22.2
3	Adam Malkowski	14:28	15:22	54	22.2
4	Mark Beattie-Edwards	14:57	15:50	53	21.2
4	Martin Davies	14:57	15:50	53	21.2
5	Mark Hobbs	16:04	16:32	28	20.6
5	Sven Van Haelst	16:04	16:32	28	20.6
Total	**5**			**444**	

14.0 Appendix 3: Unique identifiers used on Rooswijk SCUBA Support Project

Rooswijk North (Barrel) Site **Anchor UIDs**

Unique Identifier (UID)	Date	Dive Number	Description
BS17-1	26/08/2017	1	Iron anchor with possible ring. Lies on top of BS17-2 (Form 11)
BS17-2	26/08/2017	1	Partly buried iron anchor. Whole shank not visible. Lies underneath BS17-1 (Form 11)
BS17-3	26/08/2017	5	Iron anchor with possible ring. Lies 10.4m north of BS17-1 and BS17-2 (Form 5)

Rooswijk North-East (Gun) Site **Gun UIDs**

Unique Identifier (UID)	Date	Dive Number	Description
GS17-1	28/08/2017	1	Iron Gun - Shot tied in to GS17-1. Measures c.2.8m-c2.9m long including cascabel. Labelled by Mark Beattie-Edwards (Form 24)
GS17-2	28/08/2017	1	Iron Gun - Just east of shot/GS17-1. Measures c.2.8m-c2.9m long including cascabel. Labelled by Mark Beattie-Edwards (Form 24)
GS17-3	28/08/2017	1	Iron Gun - 3m east of shot/GS17-1. Measures c.2.8m-c2.9m long including cascabel. Labelled by Mark Beattie-Edwards (Form 24)
GS17-4	Not used		
GS17-5	28/08/2017	2	Iron Gun - 5m South of shot/GS17-1 (Form 14). Position updated on Form 47. Dimensions not measured
GS17-6	29/08/2017	2	Iron Gun - 25m north of shot/GS17-1. Labelled by Terry Vickers. Measured as c.2.4m including cascabel (Form 29). Measured at c.3m including cascabel (Form 78)
GS17-7	28/08/2017	2	Iron Gun - 4m south of shot/GS17-1 (Form 14). Position updated on Form 47. Dimensions not measured
GS17-8	01/09/2017	4	Iron Gun - 30m south-west of shot/GS17-1. Labelled by Mark Beattie-Edwards. Measures c.3m including cascabel (Form 58). First seen on 31/08/17 Dive 4 (Form 47)
GS17-9	29/08/2017	5	Iron Gun - 7m west of shot/GS17-1. Measures c.3m including cascabel (Form 41). Dimensions not measured
GS17-10	28/08/2017	4	Iron Gun - 4m south-west of shot/GS17-1.

			Labelled by Mark Hobbs. Measures c.2.95m including cascabel (Form 38 and Form 42)
GS17-11 to GS17- 13	Not used		
GS17-14	29/08/2017	3	Iron Gun - 5m south-west of shot/GS17-1. Measures c.2.8m long including cascabel (Form 26)

Rooswijk North-East (Gun) Site **Timber UIDs**

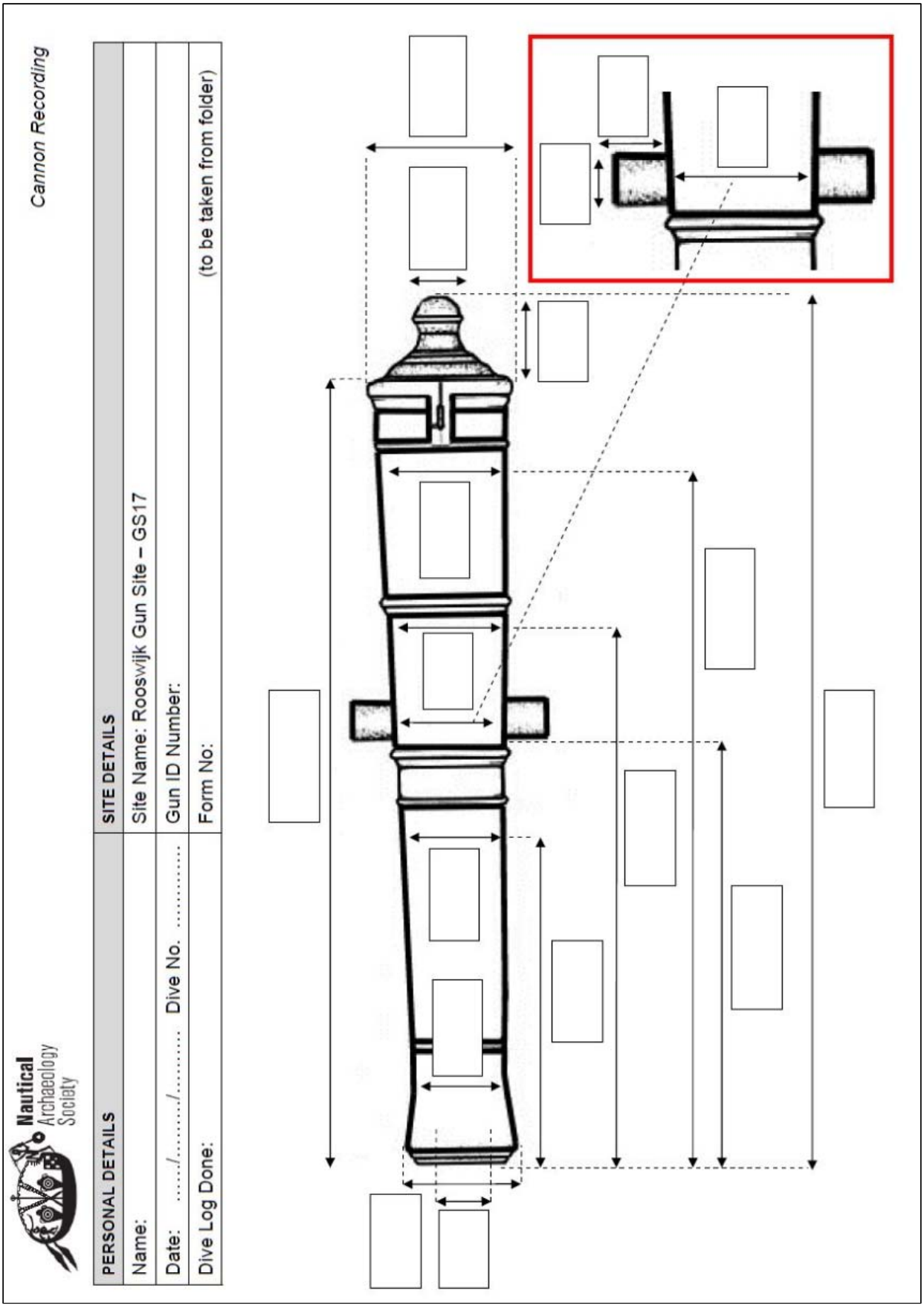
Unique Identifier (UID)	Date	Dive Number	Description
T0901	29/08/2017	1	Allocated by Mark Hobbs. West of Gun GS17-10. Measures 6.75m long (Form 37)
T0902	29/08/2017	1	Allocated by Mark Hobbs. West of T0901. Measures 7.1 m long (Form 37)
T0903	29/08/2017	1	Allocated by Mark Hobbs. West of Gun GS17-9. Measures 1.9m long (Form 37 and Form 43)
T0904	31/08/2017	1	Allocated by Mark Hobbs. West of Gun GS17-9 and T0903. Measures 3.3m long (Form 36 and Form 43)
T0905	31/08/2017	1	Allocated by Mark Hobbs. West of GS17-9 and T904. Measures 0.8m long (Form 36 and Form 43)
T0906	Not used		
T0907	31/08/2017	1	Allocated by Mark Hobbs. East of GS17-9. Measures 4.5m long (Form 40 and Form 43)

Rooswijk North-East (Gun) Site **Feature UIDs**

Unique Identifier (UID)	Date	Dive Number	Description
F0401	28/08/2017	1	Allocated by Mark Beattie-Edwards. Metal object next to shot and GS17-1 (Form 23)
F0402	28/08/2017	5	Allocated by Mark Beattie-Edwards. 5.5m east of shot/GS17-1. 0.8m long (Form 25)
F0403	02/09/2017	2	Allocated by Sara Hasan. 16m west of shot. Initially thought to be iron gun or chest but to square (Form 66). Later identified as probably ship structure
F0404-F0405	Not used		
F0406	29/08/2017	2	Allocated by Terry Vickers. Metal leg of rectangular object. 13.2m north of shot/GS-17-1 (Form 29)
F0407 – should have been given a Timber UID	29/08/2017	2	Allocated by Terry Vickers. Wooden timber. 10m north of shot/GS-17-1 (Form 29)

F0408	02/09/2017	3	Allocated by Rob Konings. North of Gun GS17-9. Iron Concretion (Form 72)
F0409	Not used		
F0410	28/08/2017	7	Allocated by Terry Vickers. Possible cannon ball mound. 240 degrees SW of shot (Form 19)
F0411	28/08/2017	3	Allocated by Terry Vickers. Concretion. 4.4m north of shot. Measures 30cm by 64cm (Form 15)
F0412 - F0414	Not used		
F0415	28/08/2017	3	Allocated by Terry Vickers. Long thin concretion. 1.5m long. 5.8m north of shot (Form 15)
F0416 - F0424	Not used		
F0425	29/08/2017	4	Allocated by Mark Beattie-Edwards. Feature 16m north of GS17-1 at 300 degree. 0.7m long. 0.5m proud of surface (Form 28)
RK17-F00002	31/08/17	3	Approx c.13m on a bearing of 40^0 from GS17-4. Concretion recovered by Mike Ferguson without authorisation. Find number given by Conservator at Finds facility in Ramsgate (Form 44)

15.0 Appendix 4: Gun Recording Form used on *Rooswijk* Gun Site



16.0 Appendix 5 – Team photographs

Rooswijk SCUBA Project team – Left to right: Edmund Fennema, Richard Savenije, Duncan Ross, Terry Vickers, Sven Van Haelst, Martin Davies, Mark Beattie-Edwards, Mark Hobbs

Rooswijk SCUBA Project team – Back row left to right: Monica Jong, Sara Hasan, Martin Davies, Sven Van Haelst, Rob Konings, Adam Malkowski, Mark Hobbs. Front row left to right: Mark Beattie-Edwards, Peta Knott.